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Vol. VIII. June, 1898. No. 1.

THE NATIONAL MEDICAL REVIEW

WITH SUPPLEMENT

THE MILITARY SURGEON.

Monthly.
$1.00 per Year.
Single Copies, 10c.

WASHINGTON, D. C.

GEORGE W. JOHNSTON, M. D.,
THOMAS E. McARDLE, M. D.,
Editors and Publishers.

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OF
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SELECT MEDICAL OPINIONS.

Minden, Sanilac Co. Mich.

Your little pamphlet has been received, for which accept my thanks. I have, however, to tell you that, so far as I am concerned, it needed not the stimuli of the pamphlet to commend your Hypophos. to me, as I have been very liberally using your preparation now for more than two years. What do I think of it? The best preparation of the kind known to me, and the only one I prescribe.

This spring, I have used it as a basis of other drugs and performed cures when others have failed. I most certainly think and publicly teach that McArthur's Syrup Hypophosphites Comp. will cure, or permanently check the deposit of tubercle in the lungs, if timely taken and judiciously followed up. I have irrefutable experimental evidence of what I affirm.

A. N. JOHNSON, M. D.

Philadelphia, June 8, 1885.

In cases of skin diseases where the system is far below the normal standard with progressive waste of tissue, a remedy which can arrest this morbific process, and, indeed, re-supply the waste, is pre-eminently indicated. Such a remedy I find constant use for in my clinic at the Medico-Chirurgical College, and among the many preparations the Hypophosphites rank superior in many instances to cod liver oil. In this connection, I want to tell you my dear doctor, that your syrup of the Hypophosphites has given me the most unbounded satisfaction, so satisfactory, that I deem it no more than proper and just to inform you of the fact. May success attend you.

Faithfully yours,

F. LE SIEUR.

Lecturer on Dermatology, Medico-Chirurgical College.

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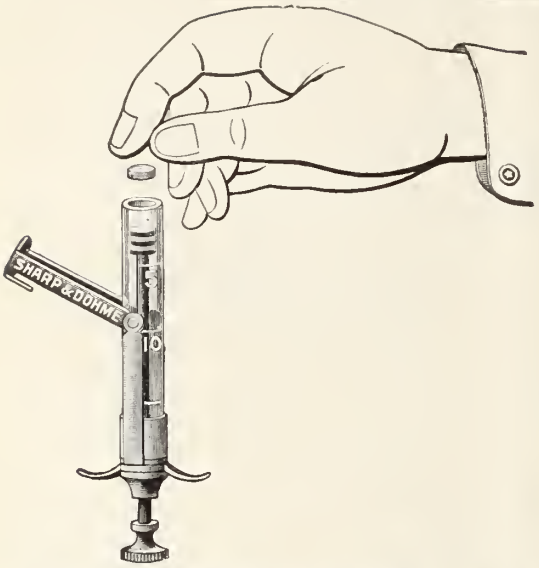

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They dissolve almost instantly in COLD water. Those physicians who have been using tablets that dissolve slowly even in HOT water will appreciate the superiority of "cold water" tablets, especially in emergency cases. Free samples.

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SELECT MEDICAL OPINIONS.

Buffalo, N. Y., April 20, 1895.

Your polite note of April 12 was received by due course of mail, and it gives me pleasure to reply, for the reason that for the first time in many years I can conscientiously and truthfully give my unqualified endorsement of the wonderful and rapid benefits derived from the use of the Hypophosphites in syrup form. The sample of J. A. McArthur's Syrup of the Hypophosphites which your agent so kindly left me, I used in my own family (daughter) who was very much run down—weak, nervous, and with that usual accompaniment of this class of ailments, tired and a general feeling of discomfort. The effects were far beyond my expectation, the system responding so readily (a few days only passing before improvement began) and the improvement has been persistent and to all appearances permanent, as I hear no more complaints as formerly, and she acts as though made over anew, and works from morning till night, day after day, eats well, sleeps well, and in conclusion will say that the remedy—McArthur's Syr. Hypophosphites Comp—has done, under my own eye, all and more than you claim for it. Should you be so kind as to send me more samples, I would like to give it to another member of my family, a married son who has had for years a "Fistula in Ano." He is some better than formerly, but this spring (at the present time) is feeling unusually weak and run down. Does not cough as a rule, and I have perfect faith that your superb remedy is just the thing for him.

Very truly and fraternally yours,
E. W. HOWE, M. D.,
1018 Fillmore Avenue.

Brockton, Mass., Sept., 1897.

You have a good preparation, one I often prescribe. A. V. LYON, M. D.

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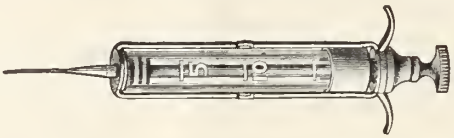
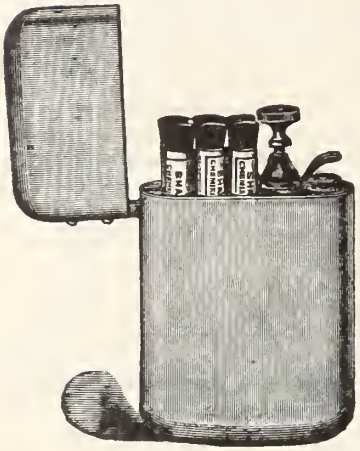
and keep it clean with the least amount . . . of effort . . . . .





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IT COSTS **$3.00** together with the smallest, handsomest aluminum case that holds 6 tubes of our soluble Hypodermic Tablets and 2 needles.

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Brockton, Mass., Sept. 1, 1897.

The sample of Dr. McArthur's Hypophos Lime and Soda Comp. left with me by your agent gave me an article that I had long wished to obtain, and as that filled the bill, I have continued its use with perfect satisfaction to my patients as well as myself. In nervous prostration it has proven a blessing in three cases. Nothing that I could find gave the patients strength and quiet as the Hypophos. Lime and Soda. I have also found it a great remedy for quieting nervous children in teething. One case of old age I am sure it has prolonged the life, and it surely has changed life to be worth living. In one old lady's case I do not know how I would succeed without the preparation. It is all you claim for it, and I shall surely continue to use it in my practice, although I am not given to use but very few of the proprietary articles of the day.

D. W. DIMOCK, M. D.

Concordia, Kans., Oct. 17, 1897.

I was treating a case of a young lady that was of a very scrofulous nature, and at that time was suffering from suppressed menstruation with attacks of fainting and hysteric paroxysms. I gave her the sample sent and when she had taken it all she came back and wanted more of same kind of medicine. She said that it had done her more good than anything else she had tried, so I got her some more, and at the present time her health is improving. I shall continue to prescribe the McArthur Syrup Hypophos. in all such cases.

D. W. ELSE, M. D.

Blountville, Tenn., July 19, 1897.

I feel safe to recommend it to the profession. W. A. MILLER, M. D.

Samples and Literature FREE. **The McArthur Hypophosphite Co., Boston, Mass.**

You Can Boil Our Aseptic Syringe

and keep it clean with the least amount . . of effort . . . . .

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SELECT MEDICAL OPINIONS.

Detroit, Mich., Oct. 18, 1897.

I have used your Syrup Hypophos. Lime and Soda Comp., and feel constrained to place it in the front rank of remedies. I ordered whiskey and tonics, stopped, and soon pain in chest was diminished, pulse 94, temperature nearly normal. My patient, a lady, is well again, though no strict diet was observed during and after the use of the same. For bronchitis, chest, lung or wasting diseases Syrup Hypophos. Comp. should be used.

PROF. ELIE LE MONTAIS, M. D.

Chicago, Ill., Aug. 2, 1897.

I have a high regard for McArthur's Syrup Hypophos., and have employed it extensively in my practice. Experience has taught me that it can be relied on every time. I shall continue to prescribe it.

E. L. HAYFORD, M. D.

Boston, May 21, 1879.

After having given your Syrup of Pure Hypophosphites a fair trial in some dozen typical cases of pulmonary trouble in widely differing subject and in various stages of advance in disease, I feel prepared to express an opinion of some possible value as to the action of this preparation.

I have noticed distinct curative powers in the first and second stages of phthisis, male and female adult, and in first stages of children over twelve years of age. In some female cases noticed an increase in the menses, apparently as thus caused. Even in the third stage of phthisis, in three cases of adults, an evident prolonging of life by supply of this nutritive element was recorded Hence, I want to add my voice to others in favoring the use of your preparation when symptoms demonstrate the need of a powerful, easily assimilated element of this sort.

JOHN DIXWELL, M. D.

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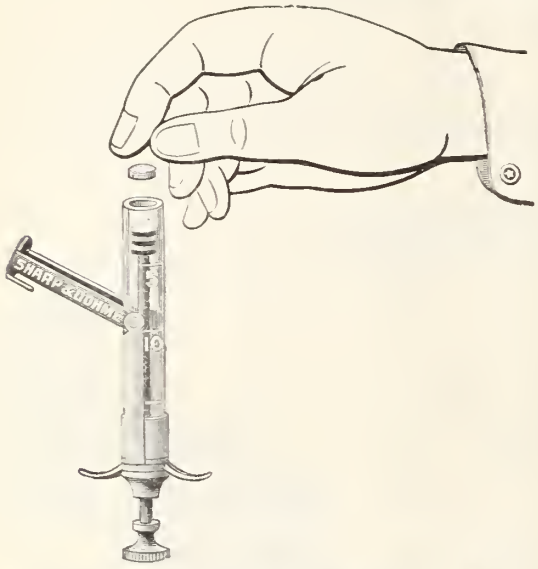

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SELECT MEDICAL OPINIONS.

Bridgeport, Conn., Dec. 9, 1893.

During the past year I have frequently prescribed McArthur's preparation, and so far am entirely satisfied with the results attained. The giving of a compound which contains half a dozen or more constituents, while producing, perhaps, at times, happy results, is not as satisfactory to me as a similar mixture which can be added to if necessary, but which contains in itself the building-up qualities, indicated in certain conditions, calling for lime or soda salts. I shall continue to use it.

WILLIS CUMMINGS, M. D.

Philadelphia, June 16, 1894.

For thirty years I have used Syrup of the Hypophosphites, and Churchill's Formula since its introduction to the American market through Dr. McArthur. It is certainly one of the best, if not the best, I have known in the practice of medicine.

It is remarkable for its combination of all the ingredients which are so well blended together in it, and gives satisfaction to the patient and success to the practitioner.

HENRY E. DWIGHT, M. D.

Philadelphia, Pa., Jan. 9, 1895.

In the use of your Syr. Hypophos. Comp. I have realized the greatest satisfaction.

DR. H. JOHNSON DEAN,
Asst. in the Neurological Dept. Jefferson College, Philadelphia, Pa.

Lynn, Mass.

In all wasting diseases, I think your syrup a most reliable remedy. It increases the appetite and promotes digestion.

DAVID F. DREW, M.D.

The McArthur Hypophosphite Co., Boston, Mass.

Upon the receipt of 45 cents in stamps to cover express we will gladly forward one regular size bottle express prepaid. Small sample and literature free.

Dynamite

Is an annihilator

So is Nytroglycerin. It
BREAKS UP ASTHMA
almost magically.

Combined with Strychnine and Morphine it is the most successful because the most rational physiological treatment of the asthmatic paroxysm.

The attack is jugulated at once.

Our hypodermic tablets of

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	Strychnine Sulph.	$\frac{1}{50}$ gr.
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(SYR: HYPOPHOS: COMP: C. P., McARTHUR.)

Its use is indicated in Consumption and Tuberculosis, Diseases of the Chest, Chronic Cough, Throat Affections, General Debility, Brain Exhaustion, Impotence and Loss of Memory.

The point of primary importance in the use of the Hypophosphites is their *chemical* purity, bnt unfortunately they are too often adulterated.

So little seems to be generally known, even among the medical profession, with regard to the chemistry of the Hypophosphites, and the absolute necessity of CHEMICAL purity, that we call attention to this point.

One of the first effects produced by the use of our CHEMICALLY PURE Hypophosphites is a general increase of nervous energy, with a feeling of ease and comfort.

The second effect is an increase of appetite; digestion is improved, and the bowels become regular in their action, the quantity and color of the blood is increased, respiration is controlled, a better expansion of the chest is observed, cough improves, easy expectoration is produced, night perspiration diminishes, the face becomes fuller, the lips red, the nails and hair grow, and in children the teeth, showing the importance of the Hypophosphites on the organ of nutrition.

☞ Physicians when prescribing will please write thus:

℞ SYR: HYPOPHOS: COMP: MCARTHUR. ONE BOTTLE.

As it is made *only for physicians* there are no printed wrappers or advertisements about the bottle.

Our pamphlet on the **CURABILITY AND TREATMENT OF CONSUMPTION** sent free to physicians upon application.

We will send one bottle of McArthur's Syrup to any physician, without charge, who will pay the express charges on the same.

Mention this Journal. McARTHUR HYPOPHOSPHITE CO., ANSONIA, CONN.

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So is Nytroglycerin. It BREAKS UP ASTHMA almost magically.

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Dose—One or more teaspoonfuls three times a day.

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Dose—One Pillet every hour, or less often, as required.

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Doctor :

Did you ever think of the extremely important part which the Hypophosphites of Lime and Soda play in the process of animal nutrition?

There is absolutely no complete life without them.

They enter into the composition of muscle, bone, cartilage, connective tissue, nerve tissue, and, in fact, every important tissue of the human body. Besides this, the soda salt takes the lactic acid, which is such a constant product of faulty assimilation, and breaks it up into carbonic acid gas and water, in which forms it is at once harmless and is readily discharged from the system.

When the entire system is in a healthy condition, with every organ working properly, and supplied with the proper variety of food, they are found in sufficient quantities at all times. But when the organs of digestion and assimilation get out of order, or foci of inflammation are established in various parts of the body, causing rapid destruction of tissue, they cannot then be supplied naturally in due proportion, and hence must be artificially supplied or the system suffers and the disease progresses to its fatal termination.

In McArthur's Syrup you will find the most agreeable and reliable means of artificially supplying these important elements.

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THE

NATIONAL MEDICAL REVIEW.

VOL. VIII. WASHINGON, D. C., JUNE, 1898. NO. 1.

Original Articles.

FIBROID DEGENERATION OF THE UTERUS AFTER DOUBLE SALPINGO-OOPHORECTOMY.

BY J. WESLEY BOVÉE, M. D.,
Washington, D. C.

The history of fibroid tumors of the uterus is of great interest to the medical profession. Medical literature teems with papers, discussions, essays and books on the subject in its multiform variations. Fifty-three pages of the Index Catalogue of the Library of the Surgeon-General's Office were required to list the titles of the literary productions on tumors of the uterus received in that magnificent library previous to 1893. Of these fully three-fourths are concerning fibromata and myomata. In the Index Medicus the list is ever increasing, and it may be reasonably assumed that nearly as many have been received during the past five years. Nor does the search for increased knowledge lose any of its energy. New facts concerning these tumors are constantly coming to light. Formerly they were considered benign from beginning to end. They were supposed to never begin before puberty or after the menopause. All these points have been absolutely refuted, at least from a practical standpoint. The large number of published cases of fibroid tumors that have undergone malignant degeneration, or that have broken down, become infected, or undergone other changes in structure detrimental to the lives of their unfortunate possessors have swept away the old ideas as to their benignancy. In fact pathologists are now searching for a distinct border-line between benign and malignant soft uterine myomata. Recurrent myomata, while not so positively dangerous as cancer, must be considered malignant. Between these and sarcomata there is not always a distinct difference. That they may appear before the establishment of womanhood, has been abundantly proven. Even the single case of Sutton should go far toward convincing the heretic as to this fact. He found a fibroid in the uterus of a childless widow, who had been twice married and had never menstruated or shown any physiological evidence of ovulation. It had been there twelve years.

It is mostly during the past ten years that the beginning and rapid growth of uterine fibroids after the menopause has been recognized, carefully observed and studied. This paper is principally concerning such growths as make their ap-

pearance after removal of the diseased appendages, of which condition the writer has met with a number of cases, and in gynecological literature has noted others that were incidentally mentioned. As an instance of such reports we may take that of Ries in his most excellent article "On the pathology of stump-exudates after salpingectomy" that appeared in the January number of The American Gynecological and Obstetrical Journal. The third case therein mentioned is "Mrs. H. Several years ago removal of both tubes and ovaries. Since then development of fibroids in the uterus: 1897, vaginal hysterectomy. (Dr. F. Henrotin)." We have been unable to find in the library mentioned any pointed reference to this pathological change in the uterus after double salpingo-oophorectomy.

The cases we have had were as follows:

1. C. B., colored, 26 years of age, both appendages removed for pyosalpinx of gonorrhœal origin (supposed) in 1895. Was ill but four weeks previous to operation; was married two months and had not been pregnant. The uterus at time of operation was about normal size and not uneven on its surface. The following March reported having had profuse hemorrhages from the uterus in January and February, and severe and almost constant pelvic pain. An examination revealed an enlarged and nodular uterus; did vaginal hysterectomy by morcellation. The uterus was found much enlarged, probably three times its normal size and studded with numerous small fibroids, none having a diameter of more than half an inch. These tumors were distributed throughout the body of the organ, being directly under the peritoneum and endometrium, as well as in the middle of the muscular wall.

11. Mrs. R., white, 32 years old, married, one child 14 years of age and no other pregnancy; this labor was followed by fever and she has continually suffered since with pelvic pain, profuse flow and dysuria. In September, 1895 she had moderate fixation of the uterus, endometritis and a doubly lacerated cervix. Curettement and trachelorrhaphy were then done with the expectation of separation of adhesions of uterus and appendages at the same time. However, when the abdomen was opened considerable pus was found in both tubes and the appendages were removed. The uterus was palpated, seemed in good condition and was left. She did nicely and returned home in buoyant spirits. But about a year later she began to have considerable losses of blood from the uterus and pains through the pelvis. In December she called at our office and the uterus was found fully double its normal size and was distinctly nodular. Hysterectomy was advised and the following month was done through the vagina and by morcellation. The uterus contained several very small fibroids.

The ætiology of fibroid tumors of the uterus is still very little understood and many are the arguments pro and con concerning the causative relations of child bearing, celibacy, age and other conditions mentioned in this relation. Emmet says that "This is one of the tributes which a woman pays for her celibacy." Reamy says sterility is the most potent cause, virginity being second, and that, when a number of pregnancies occur in rapid succession, the liability is increased to equality with sterility or virginity. Many writers take opposite sides in discussing the causative influence of these conditions. Puchelt says a powerful causative agency is sexual excitement; and hepatic and portal congestion, says Routh, (Brit. Med. Jour., 1864, 1,333) lend their in-

fluence in this direction, while Haultain (Allbutt's Cyclopaedia of Gynecology, 1896, 362) says they are not caused by sexual excitement but their growth is stimulated by it. Reamy (Am. Jour. Obst., 1886, xix, 813-822) believes the various methods employed to prevent conception are potent causes. He is a rather strong believer in the congestion theory of Mary Putnam Jacobi (Tr. Am. Gyn. Soc., vi, 28), and particularly the venous congestion incident to subinvolution. Engert (N. Am. Pract., Chicago, 1889, 1,417) believes fibroids are always organized thrombi. She has elaborated a very pretty though unsubstantial theory. La Force (Trans. Iowa Med. Soc., 1897, xv, 212-225) puts down the causes of fibroid tumors under eight different heads as follows: 1. Decreased physiological resistance, 2. arterio-sclerosis, 3. age, 4. race, 5. multiparity, 6. irritation, 7. hyperæmia and 8. inflammation. According to Kleinwächter, Rosger and others (see Williams, Med. Chron., Manchester, 1895-6, n. s. iv, 417,) recent researches have shown that the development of the uterine musculature is closely associated with that of its numerous blood-vessels. These at first consist of simple epithelial tubes, which, at an early stage of development, receive copious investments from the same mesoblastic matrix, whence, also, the musculature is evolved. It is from the undue proliferation of embryonic muscle cells of this nature, surrounding the small arteries, that fibro-myomata arise. Williams says (loc. cit.) that as the morbid growth progresses, a small nodule is formed, which soon obliterates the parent blood-vessel. The developing cells at an early date acquire the characteristic fusiform shape and arrangement.

It is well known that in many cases of fibromata uteri the appendages are diseased. Large pus tubes, tubes distended with blood, clear serous fluid, ovarian collections of blood, serous fluid or pus are commonly found complicating the presence of these growths. At least they are so considered. Whether the diseased appendages are sequelæ or causes of the fibroid growths is not clear in the mind of the writer. In the three cases herein cited of fibroids developing in the uterus after the removal of diseased appendages, the inference is reasonably strong that the fibroids were results and not causes. At the same time other causes of the growth of fibroids may have been present and exerting their subtle influences.

It is not unlikely that diseased appendages, especially extending over a long period of time, exert a powerful influence over the nutritive changes going on in the uterus. Very commonly hematosalpinx or ovarian hematoma produces severe uterine hemorrhages. In fact, many cases are recorded in which ruptured tubal pregnacy was diagnosed from gushes of blood from the uterus, accompanied by pain and marked enlargement of an appendage, and in which abdominal section has revealed no evidence of pregnancy, but, instead, an accumulation of blood in a tube, in an ovary or in both. This leads us to consider whether the congestion of the uterus that necessarily accompanies these conditions mentioned does not strongly tend to fibroid as well as other forms of degeneration of that organ. If this be so, then the real beginning of the formation of the fibroids in the uterus that are found months and years after removal of the appendages—and, too, after an excellent opportunity has been afforded to palpate the uterus without discovering any such growths, may have occurred before their ablation. If sexual excitement acts as a stimulant to the growth of the tumors, we could, perhaps, account for the slowness with

which they make known their presence, by the decreasing sexual desire that is claimed by many to follow oophorectomy. As all the cases we have found reported occurred in married women it might, per contra, appear that if there were no sexual excitement the growths, if present before castration, might not increase in size but, rather, disappear. The irritation of the pedicle ligatures in salpingectomy has been given great prominence by some writers in producing evil changes in surrounding structures.

How much influence they may have in the production of uterine fibroids in the castrated woman cannot now be stated. But, especially as the ætiology of such growths is not clear, it is only reasonable to suppose that material of lasting quality used for this purpose may have a tendency in that direction. Pelvic exudates following appendage ablation are, in the hands of some, very common. Schauta found it 31 times in 189 of his cases. These may have a strong ætiological influence in the production of uterine fibroids.

If Schauta continues to follow his cases we may expect evidence of this character from them. Uterine fixation is also common after this operation, as are uterine hemorrhages of varying character. Schauta was obliged to resort to vaginal hysterectomy in some of his cases for this latter condition. From a normal uterus there should be no flow of blood after recovery from double salpingo-oophorectomy, except from such agencies as fright, overwork, hemophilia, and other conditions acting generally. The simple presence of such repeated hemorrhages is, after elimination of the general causes mentioned, sufficiently diagnostic of a diseased uterus and may or may not call for its removal. That such irritation may lead to fibroid degeneration is certainly logical.

It is very common for abdominal surgeons to remove fibroid tumors from the uteri of women in advanced life—tumors that were first discovered five, ten or twenty years after the menopause and grew rapidly. A large number of such have been reported. It is not reasonable to suppose their formation antedated the menopause and that they were dormant so many years as nuclei only to take on rapid growth such long periods of time after it. We may as well consider them as congenital by merely increasing the length of time they were in the dormant state. Of much the same nature are those fibroids that appear first after ablation of appendages. The writer is inclined to think the growths were not present at the time of operation on the appendages but developed in the degenerating uterus later. This is a straw to add to the evidence offered by pelvic surgeons who have of recent years strongly advocated and practiced removal of the uterus with appendages degenerated from inflammatory action. This practice, upon the reasons they have offered, we have usually declined to adopt, for the reason that the results without it in our hands have been good, especially when preceded by curettage. But we must confess that subsequent fibroid degeneration is an extremely strong argument in favor of such removal of the uterine body. Hysterectomy is a very severe ordeal for a woman to undergo after having gone through double salpingo-oophorectomy, and we doubt not it has been necessary in very many cases.

In women who have suffered for years from adherent and degenerated appendages, or even from acute purulent inflammation of them, the uteri have usually undergone pathological change. This may or may not be to the extent of being irremediable. At all events, there must be decreased physiological resistance,

which, according to La Force, is a potent cause of fibroid degeneration of the uterus. If it be to an irremediable extent, that is to say, beyond resolution and return to a normal condition, or permitting physiological atrophy to occur after ablation of the appendages, the development of fibroids in the organ may, and no doubt does occur. In such cases the appearance of fibroids in the uterus would be sure to occur in time, whether or not the appendages were removed, unless some additional unknown influence, incident to castration, goes on in the organ. We very frequently find an arterio-sclerosis in the uterus after its prolonged fixation with diseased appendages, and certainly we might expect fibroid degeneration to follow it. Whether age, race or multiparity have any influence on the growth of these tumors in the uterus after appendage ablation can not now be stated, as in the few cases we have had and found in the literature there seemed to be nothing of note in such connection. In one case of ours the woman was 26 years old, and married but two months. Whether sexual activity was influential in her condition must be mere surmise. Altogether, we are unable at the present to throw any light on the subject, but believe the appearance of the growths after double salpingo-oophorectomy is a natural sequel to the operation rather than a mere coincidence. If, with this short paper, we succeed in prompting more detailed reports of these occurrences, and incite careful study of the same, we shall feel that apology to the reader will be unnecessary.

To sterilize impure drinking water, use a solution of 20 parts each of bromine and potassium bromide in 700 parts of water. In five minutes neutralize with a 9 per cent. solution of ammonia. Army M. Dep. Rep., 1896.

THE NECESSITY OF ACCURACY AND UNIFORMITY IN CLINICAL LABORATORY INVESTIGATIONS.*

By G. W. Johnston, M. D., and Andrew Stewart, Ph. D.,
Washington, D. C.

Various chemical, microscopical and bacteriological procedures have, as we know, been grouped together, and constitute important factors in the diagnosis and systematic study of disease. In carrying out many of these procedures, we have felt the need of precise descriptions of method, and also of information as to the conditions under which the given investigations were conducted.

In the brief remarks which follow, we will speak of some of the causes which militate against accuracy and uniformity in certain branches of clinical laboratory study, and in the results obtained therefrom, and will suggest measures which, however imperfect they may be, tend, we believe, in our work, to lead to the establishment of fixed data for comparison. It seems to us that a series of standards would make laboratory work easier, would facilitate control experiments and increase the value of facts gathered from a variety of sources.

1. In laboratories connected with hospitals, examinations of the blood may be made at any time, and as often as desired. In private laboratories, however, but one examination must often suffice, and it is doubly necessary, therefore, that this be as accurate and complete as possible. To insure a proper degree of accuracy, care is required to reduce unavoidable errors to a minimum, and to eliminate all sources of avoidable error.

The hemometer of Fleischl is not an instrument of precision, and the method

*Remarks made before the Clinical Laboratory Society, Baltimore, Md., May 5, 1898.

of computation with the Thoma-Zeiss apparatus enormously exaggerates any mistake that may have been made in counting the blood corpuscles. These are both sources of unavoidable error, which, in our own work, we try to minimize as much as possible. By reading the hemometer, while in the hemometer box which we have designed, † the light transmitted through the two sides of the cell is always the same for every case, whether the examination be conducted in broad daylight or in a dark room.

And, again, by using two Thoma-Zeiss pipettes and two slides, and by making double or alternate counts, we believe we can very materially diminish any error that is inherent in the apparatus, *per se*, and do away with that due to personal equation.

There are, however, certain sources of error that are to be sought for in the patient, and not in ourselves or our instruments. The blood to be examined should present a picture typical of the pathological process we are investigating, and this picture should not be dimmed or distorted by the results of physiological changes going on in the organism. Of these let us consider only the influence of fasting and of food and drink upon the accuracy of our blood examinations.

In reading the reports of blood investigations, it is stated that the number of the corpuscular elements was such or such, but no mention is made of when or under what conditions the examination was conducted ; and it is, we believe, the universal custom to make blood counts at any time it happens to be convenient. If, however, food and drink produce any appreciable alterations in the blood, and these alterations depend for their intensity upon the amount and character of the substances ingested, our examinations will be of little value unless these facts are taken into consideration and mentioned in the record of the case.

We know that, in health, during digestion, the number of red blood corpuscles per cc of peripheral blood is diminished, and the number of leucocytes increased. From the experiments of Vierodt and Reinert it would appear that there is a loss of about 500,000 reds (or 10 per cent. of the number present in the normal adult male), and, again, of 3,000 leucocytes (or about 50 per cent. of the number found under like conditions). What differences are to be observed in various pathological states we do not know. In a series of cases of neurasthenia upon the rest-cure treatment, in which we carefully studied the blood conditions, the average diminution in the reds, four hours after the heaviest meal of the day, amounted to 737,000, and the increase in the whites to 10,598, but there were very marked differences between the individuals, and pronounced variations in the same person from day to day. It is almost certain, therefore, that the alterations in the number of corpuscular elements of the blood induced by food and drink are, in many instances, sufficiently marked to lead the examiner to incorrect conclusions as to the existence or non-existence of a quantitative anemia, or of a leucocytosis; and when we come to make allowance for the amount and quality of the solids and fluids ingested and the digestive and assimilative capacity of the individual, we are introducing a number of complicated and indeterminate factors.

It has seemed to us that this source of error is largely avoidable, or at least may be reduced to a minimum, if the blood in every case be examined at a time when it is least likely to be influenced by causes of this sort. We have, therefore, for the past year made it a practice to obtain

†The National Medical Review, 1897-1898, vii, 222.

specimens for investigation early in the morning, the patient having eaten nothing since the evening before, or, where this has worked a hardship, the blood has been secured at the end of the longest possible interval of fasting. We thus secure a uniformity of method; the conditions are alike in every case, and we can compare the finding of one with those of another, or in the same case when examined at different times. This plan, it is true, has some inconveniences, but we believe that theoretically it is without objection, and that practically it results in our examinations becoming more accurate and more satisfactory.

2. The uniform employment of some one accurate method of determining, not only the presence but the number, of casts in the urine, would, it seems to us, be an important advance in urinology. It is the universal custom among clinicians, and even among most of the writers of our works on urine analysis, to speak of casts in the urine as few, numerous, abundant, present in enormous quantities, etc., yet no mention is ever made of a standard upon which estimation has been based, nor is reference made as to what method has been pursued in their discovery. Again, we are not informed whether the above terms are applied to a single microscopic field, a whole slide or number of slides, or to the entire body of the urine; nor is it stated how the specimen was prepared for examination. Now, all these items affect so directly and vitally the end result, that information obtained from a microscopic examination of urinary sediment, as yet unsatisfactory, would be vastly more useful if investigators would, as stated above, confine themselves to some recognized method of procedure. Employment, for instance, of centrifuges of known (and the same) length of arm and size of tube, whirling at a uniform speed for the same length of time, and mounting and examining in the same manner, would do much to furnish comparable data. This matter has acquired added importance, since recent experience, confirmed by the investigations of Drs. Haines and Skinner (J. Am. Med. Ass., Chicago, 1898, xxx, 234), has proved that casts may be found in all urines, providing a sufficiently exhaustive search be made for them. In the light of this fact, it would seem of the greatest importance to elaborate our methods, in order to establish, as in the counting of the corpuscular elements of the blood, a normal in health as a basis from which to proceed to a more accurate study of conditions of renal disease. To this end, an instrument, combining the features of a centrifuge and Thoma-Zeiss counter, might be constructed; then, by following the method of Haines and Skinner, observing some such uniform procedure as that suggested above, and working with a uniform amount of urine, a standard might be fixed, and all results referred to it. Such an instrument might be further utilized for the quantitative microscopic determination of other sedimentary elements.

3. In papers, and even in text books on clinical diagnosis, it is but too frequent that chemical experiments are described with so little regard for scientific precision that it is, indeed, often difficult or impossible to repeat them. One is, for instance, directed to take "a little nitric acid," or "10cc of a concentrated solution" of this or that. Now, "a little" is a term of indefinite relation; there are possible an endless variety of strengths of nitric acid; and the incongruity of "a concentrated solution," connected with so definite a quantity as 10 measured cc, is at once apparent. Again, one is directed to add "not too much" of a given reagent, or a test is said to be sensitive to a certain degree of

dilution, reference seldom being made to the quantities of suspected substance or reagent used. This last is true of the tests for lactic acid, a compound of such diagnostic importance in the gastric contents. The results of determining the ultimate delicacy of three well-known and reliable tests for lactic acid under something like definite conditions, may be of interest, and can be tabulated as follows:

(See table in next column.)

		Uffelmann.—Test tube 7 x 7-8 inches using 35cc reagent.	Arnold.	Kelling.—Test tube 7x1 inches; observations made downward through column.	
Drops of 1 per cent. acid sol.	Detected	1	1	1 drop (ferric chloride) distinct yellow-green.	50cc 1 per cent. acid sol.
	Decisive	24 (reaction complete)	3 (reaction complete)		
Drops of 0.5 per cent. acid sol.	Detected	1	1	1 drop distinct yellow-green	50cc 0.1 per cent acid sol.
	Decisive	36 (reaction complete)	5-6 (reaction complete)		
Drops of 0.1 per cent. acid sol.	Detected	1	1	1 drop pale yellow-green	50cc 0.01 per cent. acid sol.
	Decisive	130 + (reaction complete)	20 (slate green; complete)		
Drops of 0.05 per cent. acid Sol.	Detected	2 (very faint)	6	1 drop *pale* yellow-green	50cc 0.001 per cent. acid sol.
	Decisive	5 (quite distinct)	50-60 (slate green comp.)		
Drops of 0.01 per cent. acid sol.	Detected	20 (very faint)	75 no reaction	1 drop, no reaction	50cc 0.0001 per cent. acid sol.
	Decisive	50-60 (quite distinct)			

In these experiments Merck's lactic acid (U. S. P.–75 per cent.) was used, and from this the solutions were prepared. While the test of Arnold (J. Am. Med. Ass., Chicago, 1897. xxix, 371) has been described by its author with accuracy, we have made possibly a little more elaborate study of its sensitiveness than heretofore. It is scarcely possible to compare the results of Kelling's test with that of Arnold or Uffelmann, owing to dissimilarity of conditions. In the first, the suspected material is, in bulk, enormously in excess of the reagent; in Uffelmann's test the conditions are reversed, and in Arnold's the volumes are nearly equal.

4. For obvious reasons it is apparent that no opinion can be formed as to the quantitative elimination of any normal or morbid constituent of the urine, unless the total amount of urine excreted in the 24 hours be known, and, unless the specimen examined represents this total quantity. Many, however, entertain the belief that, if the urine which is first passed in the morning be added to that excreted in the evening, the mixture (or an average of the two) will fairly represent the total 24 hour excretion. To ascertain just how much foundation this belief has in fact, we have recently made a series of investigations in healthy individuals, extending over a week, comparing the amount of solids and of urea per litre of the

morning and evening urine, and contrasting the average of the morning and evening excretion with the total elimination (per litre) of the 24 hours. It was found that the amount of solids per litre of evening urine exceeded the amount in morning urine in 60 per cent. of the observations made, while the relative quantity of urea in the evening specimen surpassed that contained in the morning specimen in only 40 per cent.

The morning and evening specimens being kept separate, the remainder of the urine passed in 24 hours was collected, at at the end of which time the three specimens were transferred to one vessel, the mixture, therefore, representing the total 24 hour excretion. According to the idea of many, the average of the solids and urea per litre contained in the morning and evening samples should correspond more or less closely with the amount per litre contained in the mixed specimen. In other words, the average per litre of excretion at the beginning and at the end of the day should indicate the total elimination per litre for the entire day. As a matter of fact it did not do so in a single instance. The solids contained in a litre of the mixed morning and evening urine exceeded the quantity per litre in the mixed 24 hour urine in 60 per cent. of the observations; the greatest excess being 6.985gm, the least 1.51gm, and the mean 4.074gm per litre, whereas in the 40 per cent. of observations, where the solids per litre of the 24 hour quantity exceeded those in the mixed morning and evening specimens, the mean excess was 2.21gm per litre.

The urea contained in a litre of the mixed morning and evening urine exceeded the amount in the mixed 24 hour urine in every instance, the greatest excess being 7 75gm and the mean 3.025gm per litre.

It is apparent, therefore, that but very imperfect knowledge as to the amount of solids, or urea, per litre of urine can be gained from a report based upon an examination of the first urine passed in the morning or the last passed in the evening, or of a specimen resulting from their combination. For an accurate estimation of the proportionate excretion of the solids, or of urea, it is just as necessary for the examiner to have at his disposal the total quantity of urine passed in the 24 hours (or of a specimen therefrom), as it is, were the total excretion of solids and urea to be determined.

CHANCRE OF TONSIL.

By A. E. Bradley, Captain and Assistant Surgeon, U. S. A.

Mrs. X., the wife of a non-commissioned officer, sent for me on January 21, 1897. She was pregnant and she announced that since January 14, she had been troubled with sore throat which she had treated without effect with domestic remedies. On inspection the right tonsil was seen to be enlarged and covered with a gray lymph deposit; having no reason to suspect specific disease, from all appearances I judged the condition to be ulcerative follicular tonsillitis and ordered iron and glycerine locally and quinine internally.

In a week's time I was surprised to learn that the condition's remained the same. I again saw her and found practically no change. On instituting a more careful examination it was learned that prior to this she had never had throat trouble. She had pain only during deglutition, limited to the right side. The tonsil was much enlarged, indurated and hardened, slightly ulcerated and covered with a granular deposit not unlike diphtheritic membrane. The glands of the neck, right side, were enlarged and indu-

rated especially along the sterno-celido-mastoid. The subsequent symptoms cleared up the case and made diagnosis easy, but at this time it puzzled me ; my first diagnosis was not satisfactory and many symptoms were absent which one should expect were it diphtheria. Various remedies were tried with no success.

A roseola appeared on February 26, which established the diagnosis without doubt. The eruption first appeared on the face and scalp, and was accompanied by fever. March 8. The face and scalp are desquamating ; the lymph glands on right side of neck and superficial occipital glands are enlarged; the hair is beginning to thin; bone pains are present and the condition of the tonsil is unchanged. Inunctions of oleate of mercury were ordered. March 15. Has used inunctions one week; glands the same; eruption slowly disappearing; a mucous patch is seen on posterior pillar of fauces, right side; tonsil unchanged; occipital glands somewhat larger; inguinal glands not affected.

March 29. No eruption; on coming in out of the cold, face and hands show by blush spots the site of former eruption ; tonsil about the same; occipital glands size of a pea; whole pharynx deeply congested; patch still exists on right pillar; a mucuous patch is seen on left tonsil; inunctions increased, glycerine and tannin gargle ordered.

April 7. Enlarged glands noticed on left side neck and occiput; no eruption; blush spots from cold still seen; anterior pillar is indurated; general condition good.

April 13. All glands diminished in size; tonsil shrinking; mucous patches disappearing; condition good; laxative pill ordered for constipation.

April 20. Hair has become very thin; tonsil diminishing in size; is less hard; glands nearly normal ; a mucuous patch is seen near uvula ; general health and spirits excellent; now using about two drachms daily of an ointment containing 80 parts oleate of mercury 10 per cent., and 40 parts vaseline. On May 7, she passed from my observation and joined her husband late in the summer at another station. She was instructed to keep up her treatment and to report on her arrival to the surgeon to whom I had written concerning her. Dr. La Garde wrote me later, about August 31, that she had been delivered of a syphilitic child which survived only a few days.

This poor woman was a bride and from what can be learned she was infected at her wedding by being kissed by a woman present who had a "bad disease" caught from her husband, because of which she left him.

Mrs. X. was married on Dec. 3, last, menstruated on Dec. 10, first noticed the sore tonsil about January 14, and cutaneous secondary symptoms were first evident March 8. Her husband I had known for a year and a half and I believe him to have been a clean healthy soldier in every respect. It was impossible for her infection to have come from him. After going into the whole history of the case carefully it is believed that the kiss of good will at the wedding by the woman with the "bad disease" infected her. Examination of the genitals showed them to be healthy in every respect. At no time were the inguinal glands implicated while under observation, and no reasonable doubt exists that this was a case of tonsillar chancre. This unfortunate woman shortly after her confinement had the still further misfortune to lose her husband from typhoid fever contracted while on the march en route from Fort Yellowstone to Fort Robinson.

Fort Yellowstone, Wyoming.

THE NATIONAL MEDICAL REVIEW,

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AND

THE MILITARY SURGEON,

A SUPPLEMENT,

UNDER THE CHARGE OF

Colonel WILLIAM H. FORWOOD, Assistant Surgeon-General U. S. Army.

OFFICE: 1437 L Street, N. W.

WASHINGTON, D. C., JUNE, 1898.

Notices and Reviews.

ACCIDENT AND INJURY. By Pearce Bailey, M. D. New York, D. Appleton & Co., 1898.

The main object of this book is to show the relations of accidents and injuries to diseases of the nervous system. We fully agree with the author that whilst the nature of the traumatic neuroses is still in many respects obscure, yet sufficient evidence as to their causes and symptoms has now accumulated to permit them to be recognized as definite clinical types, and to be diagnosticated with reasonable accuracy. The author lays great stress upon the necessity of making a painstaking examination of cases which are in themselves obscure, and in which, for forensic reasons, accuracy of diagnosis is especially essential. He thinks the examination may best be divided into four stages, viz.: the ancestral and previous personal history of the patient; history of the accident; the physical evidence of predisposition to nervous disease; and the examination for the actual injury.

The body of the book is divided into four parts, in which are considered: the organic effects of injury to the nervous system; the functional effects of injury, especially the nervous disorders which most frequently follow railway and allied accidents; malingering; and the treatment of the traumatic neuroses.

We congratulate Dr. Bailey upon the thorough and effective manner in which he has accomplished the task of placing so valuable a work in the hands of the legal and medical professions. We are sure that surgeons and lawyers will almost equally appreciate the value of the book.

KING'S MANUAL OF OBSTETRICS.

The reference to the symphyseotomy operation of Dr. Joel O. Williams (page 414, May number of this journal) was intended to claim for him the sixth operation in the world, and the first outside of Naples, in the year 1880.

PROCEDURES RECOMMENDED FOR THE STUDY OF BACTERIA, with special reference to greater uniformity in the description and differentiation of species. Being a report of a Committee of American Bacteriologists to the Committee on the Pollution of Water Supplies of the American Public Health Association. The Rumford Press, Concord, N. H., 1898.

In the preface to this pamphlet, written by Charles Smart, Deputy Surgeon General, U. S. Army, it is stated that, at the meeting of the American Public Health Association in 1894, it was suggested that a co-operative investigation be undertaken into the bacteriology of

water supplies as a means of bringing order out of the chaotic state of the literature of water bacteria and throwing light on questions of practical sanitation. A subcommittee was appointed to determine the method of laboratory procedure to be adopted by the committee in the practical work of investigation, technical details were discussed still further at a convention held in New York in 1895 and the whole series was referred to a committee consisting of Drs. J. George Adami, A. C. Abbott, T. M. Cheesman, George W. Fuller, W. T. Sedwick, Charles Smart, U. S. A., Theobald Smith and W. H. Welch. This Committee submitted its final report at the meting of the Association in Philadelphia in 1897. The report, as Dr. Welch says, is not intended to be a treatise upon bacteriology. Its purpose is to propose certain recommendations relating to the fundamental methods to be pursued in the study of bacteria as will, it is believed, lead to greater uniformity in the determination and description of the characters of bacterial species. The tests described are divided provisionally into "necessary" and "optional," the former including Source and Habitat, Morphological Characters, Biological Characters, Biochemical Features and Pathogenesis; the latter Morphological, Physiological, Biochemical, and Pathogenesis.

This report will prove of the greatest assistance to all those engaged in bacteriological research. The names of its compilers are at once a guarantee of its extraordinary value, and it will doubtless lead to uniformity and exactness not only in one limited field but in the whole domain of bacteriological investigation.

ESSAYS ON ORTHOPEDIC SURGERY. By Newton M. Shaffer, M. D. New York, D. Appleton & Co., 1898.

We have read these essays with a great deal of pleasure and interest. The revolt of the general practitioner against specialism is sure to come in the near future. The laryngologist has no more right to attend measles because the patient has a cough than the gynecologist has to operate for appendicitis because the appendix and the ovaries are in the abdominal cavity. Dr. Shaffer makes a strong plea for true specialism, and we fancy he has as much contempt for the man who practices *general* medicine under a *special* trade-mark as for any other species of charlatanism.

THE DISEASES OF THE STOMACH. By William W. Van Valzah, A. M., M. D., and J. Douglas Nisbet, A. B., M. D. Illustrated. W. B. Saunders, Philadelphia, 1898.

The great advance made in this branch of medicine is indicated by the recent publication of two works on the subject in the English language. The general principles of the study of digestive diseases were first worked out by German investigators, to whom we owe nearly everything of practical value concerning them.

The authors of the above work present in a clear and concise manner the views of the leading authorities, and consider them in the light of their own experience. The book is divided into six sections, the first of which is in the nature of an introduction, and includes a classification which differs somewhat from the one usually observed. The diseases are divided into two classes dynamic and anatomical. Under dynamic diseases are those which are usually classed as functional, including the various neuroses. Section II. deals with the subject of diagnosis and diagnostic methods Considerable space is given to the discussion of this subject because of the important place it has assumed in gastric pathology. Especial attention is drawn to the value of a full clinical history and exact chemical procedures in determining the functional activity of the stomach. The physical, bacteriological and anatomical aids to the diagnosis are well treated. Section III. is devoted to the consideration of general medication; stress is laid upon digestive hygiene and the great value of diet in the treatment of stomach disorders. The remainder of the book deals with the various diseases and their pathology and treatment. The dynamic affections are subdivided into sensory, secretory and motor. A new terminology is introduced

in the division of the secretory disturbances into 1. adenohypersthenia gastrica, which includes as sub heads, a. hyperchlorhydria, b. digestive hyperchylia gastrica, c. paroxysmal hyperchylia gastrica and adenasthenia gastrica.

The chapters on neurasthenia and myasthenia gastrica are very full and complete.

Section V. takes up the anatomical diseases, gastritis, ulcer, carcinoma, etc., and shows the results of painstaking investigation on the part of the authors. The last section must be considered of great importance; in fact, the importance can not be exaggerated. The secondary diseases of the stomach and the influence of digestive disturbances on other organs are subjects too frequently neglected by specialists. The attention paid them in this excellent work will no doubt commend itself to the general practitioner. The book is well bound, the print and paper are all that could be desired. It is a work that can be heartily recommended to those interested in this branch of medicine.

DAYDREAMS OF A DOCTOR. By C Barlow M. D. The Peter Paul Book Co., Buffalo, 1898.

Dr. Barlow has written a very readable book. There is nothing in it that every physician does not already know; but there are a great many facts in its pages which will prove interesting and instructive to the laity. The author is an enthusiast on the subject of woman's equality with man, and argues that it is impossible for a son to be more intelligent than his mother. This may be given as a specimen of his logic. The doctor has also some very decided views on the perniciousness of the tobacco habit. We infer that he does not use the weed himself, and does not know its solace. The chapter on preventive medicine conveys some good ideas, but the mode of expression is not always happy. We would like to say many nice things about this volume, as it is so handsomely printed on deckle-edge paper. W. T.

REPORT OF THE HEALTH DEPARTMENT, SAN FRANCISCO, 1897.

This volume contains much matter of sanitary interest. For example, we learn that an ordinance has been passed and enforced prohibiting the spraying of clothes in laundries by means of water emitted from the mouth. An inspector of bakeries has been appointed and through his exertions the filthy and disease-breeding surroundings which formerly appertained to many of the bakeshops have been entirely abated and his system of daily inspection effectively prevents a relapse into their former deplorable condition. These two points are well worthy the consideration of the health officers of other cities.

Two milk inspectors patrol the city daily taking samples of milk from the different hotels and restaurants and the fact that the samples rarely fail to come up to the official standard demonstrates conclusively the success of inspection.

The board of health does not claim to have strengthened the virility or improved the fecundity of the people of San Francisco, nor does it boast of a more prolific clientele than the neighboring city of Oakland, but it does claim that by its constant reminders to physicians and midwives of failures to register births occurring in their practice, and latterly the arrest and conviction of those who have been derelict, to have brought about promptness in the filing of birth reports.

Reprints and Pamphlets Received.

Walker (W. A.) Faulty metabolism-nutrition and growth. Repr. J. Pract. Med., Apr., 1898. Annual Report of the South Carolina Experiment Station at Clemson Agricultural College, S. C., for year 1897, Shannon & Co., Greenville, S. C. The truth about Cigarettes. Repr. Medico-Legal J., March, 1898. Farrell (P. J. H.) Medical officers in the army; a lecture. Cubery & Co., San Francisco, 1898. Graves (W. W.) A preliminary report on the method of overcoming high resistance in Crookes' tubes; a possible step toward maximum radiance. Repr. Am. X-Ray J., Apr., 1898. Farrell (P. J. H.) The sanitary corps N. G. C., Repr. Pacific Med. J., Nov., 1897. Haas (S. V.) and Morrison (J. B.) A clinical study of kryofine. Repr. New York. Med. J., March 26, 1898. Walker (H. O.) Some remarks and reports upon specimens in abdominal surgery. Repr. Physician and Surgeon, Detroit and Ann Arbor. Burnett (S. M.) Hints on the hygiene of trachoma and the influence of altitude and climate. Repr. J. Am. Med. Ass., Jan. 15, 1898. (Also:) A study of ocular coloboma. Repr. Am. J. Ophthal., March 1898. (Also:) On some changes in visual sensations after cataract extractions and especially blue vision (kyanopsia.) Repr. Ophthal. Rec., Jan., 1898. Lewis (H. E.) Irregular menstruation in young women due to anæmic conditions. Repr. Vermont Med. Monthly, Aug., 1897. Phelps (A. M.) The production and sale of antitoxin by the New York Board of Health. Repr. N. Y. Med. J., Apr. 2, 1898. Connor (L.) Amblyopia from suppression, congenital imperfection or disuse; which or all? Repr. J. Am. Med. Ass., Jan. 22, 1898. Transactions, Section on Ophthalmology, College of Physicians, Philadelphia, Meeting Apr. 19, 1898.

Progress of Medicine.

GENERAL MEDICINE AND SURGERY.

Contribution to the Study of the Pathogenesis of Basedow's Disease.—Haskouvec.

The various theories of Basedow's disease which have been promulgated are insufficient. The theory which has the most supporters is the one which refers the condition to an intoxication; but the method through which it acts is not rendered very clear. The experiments which the author has made in the institute of M. Spina at Prague, which deal with the action of thyroid extract on the central nervous system, are of sufficient importance to interest neurologists. Thyroid extract produces, after intravenous injection, a diminution of the intra-arterial pressure and acceleration of the pulse—the cardinal symptoms in Basedow's disease. The cause of the acceleration may be due either to a paralysis of the center or peripheral nerve-ending of the vagus nerve, or it is the result of excitation of the intra-cardiac ganglia of the heart itself, or it may be caused by the excitation of the accelerator nerves. The acceleration, however, is observed even after section of the peripheral vagi, or when they have been paralysed with atropin, and, therefore, the acceleration can not be due to the vagi when cut or paralysed in the manner described. If the bulb is divided, acceleration is no longer observed on thyroid injection. This shows that direct action on the heart does not cause the acceleration and leads to the belief that the accelerator centre in the medulla is influenced by the extract. In order to make the proof more direct the author has excised the first dorsal ganglia in which the majority of accelerator fibers run; then again he has divided the spinal cord above the first dorsal vertebra. In neither of these instances was he able to observe an acceleration of the pulse after thyroid injection. In fact in several instances he noted distinct slowing. It was still posssible to produce an acceleration of the pulse even when the heart had been slowed. Through these researches new light has been thrown on the relationship between the vagus and accelerator nerves, and upon the possibility of toxic excitation of the accelerator centres. The cause of the lessened intra-arterial pressure is not yet made out.—Haskouvec (L.) Contribution à l'étude de la pathogénie de la maladie de Basedow. Gaz. hebd. de méd., Par., 1898, xlv, 78.

The Pathological Anatomy of Concussion of the Spinal Cord.—Kirchgaesser.

The fact that serious disturbance of the nervous system may arise as the result of concussion of the spinal cord has been known for a long time. Schwan and Bickeles had shown a direct disturbance of the axis cylinders in such cases; but as the only work on the subject had been done by these investigators, the author began some researches on the subject, in order to prove the assertions made by them. The author experimented on animals by striking them over the vertebral column with a wooden hammer. Usually after the second blow, tetanic spasms in the hind legs, and sometimes clonic spasms in all four extremities were produced. One rabbit died, the others were killed after 8–14 days by opening the jugular vein. No visible macroscopic changes could be made out. The microscopic examination of the spinal cord, in which the preparations were stained according to Marchi's method, showed that in the four animals which suffered the severest concussions, a distinct degeneration of the sheaths of Schwann and of entire nerve fibers could be made out. These degenerative changes originated in the region which was subjected to the force producing the concussion. The changes become less marked above and below the area of concussion. Typical secondary degenerations were found in the columns of Gall, cerebellar tract and pyramidal tract. In the fifth experiment where the concussion was rather weak, the changes were much less marked. In a case where the animal showed no paresis after the concussion, distinct changes, however, could be discerned in the anterior half of

the spinal cord. Secondary changes did not occur. The conclusion is reached that uncomplicated concussion can cause severe disturbances in the axis cylinder and sheaths of Schwann. How far these may undergo regeneration has not yet been determined. In the consideration of the connection between nervous disease and previous accident, the result of the above researches must attain considerable importance.—Kirchgaesser (G.) Zur pathologischen Anatomie der Rückenmarkserschutterung. Muenchen. med. Wchnschr., 1898, xlv, 165.

The Treatment of Obesity with Thyroid Extract.—Affanassieff.

The various methods of treating obesity all have the disadvantage that they interfere with the liberty of the patient; but this disadvantage does not obtain in the method dependent on the employment of thyroid extract. The fact that this substance has a decided diuretic action and increases the gas metabolism in these individuals, and as a result, causes an increased consumption of carbohydrates, renders its employment a rational one. The fact that some authors have shown that an increase in nitrogenous metabolism also occurs, when thyroid extract is employed, is not altogether proven. Even if it were, the administration of the remedy is not absolutely contraindicated if there is no manifestation of a loss of albuminoid substance in the condition of the patient. There is no danger in the use of thyroid substance when the individual is strong. When, however, severe disturbances due to obesity are present, hypertrophy of the heart, weak pulse, congested liver, etc., care must be exercised in its administration. The author gives tabulated reports of six cases treated by various preparations of the thyroid gland. The loss in weight was well marked, regardless of the form in which the gland substance was given. Merck's Thyroidin gave the best results. The author comes to the conclusion, as a result of his clinical observations, that we have in the various preparations of thyroid gland, a remedy, which will reduce the quantity of fat in an obese person without trouble on the part of the patient or physician, and which will protect the patient from the evil results of the accumulation of fat.—Affanassieff (M.) Zur Behandlung der Fettleibigkeit mit Schilddrüsenpreparaten. Klin. therap. Wchnschr., Wien, 1898, v, 178.

Faradization in the Treatment of Atony of the Bladder.—Laruelle.

The author recommends the use of faradization of the bladder in certain cases of atony and reports a case treated in this way which resulted in the cure of the patient. From his observations he draws the following conclusions: 1. There is a form of vesical atony which is not due to obstruction by the prostate gland; 2. primary atony may be due either to a diminution or atrophy of the muscular fibers, and in this event is capable of being cured; or to fatty degeneration of muscle, and consequently incurable; 3. faradization is prudently employed in the first case where there is merely muscular relaxation or atrophy; all treatment is useless when sclerosis has affected the muscular walls. Faradization was carried out by the following procedure: One pole covered with a moist sponge is placed over the lower abdomen. Into the bladder is introduced a metallic electrode covered with rubber except the tip which is free. A gentle current is allowed to pass for a short while, the electrode in the bladder being moved about, so as to come in contact with the whole bladder wall.—Laruelle (L.) La faradization appliqué au traitement de l'atonie vésicale. Rev. internat. d'électrothér., Par., 1897-98, viii, 1[illegible].

Intermittent Hyperparotid.—Claisse.

The author reports a case of this affection in a man 38 years of age who suffered from intermittent inflammation in the region of the left parotid gland. At first the swelling of the gland remained permanent and painful for a week; it then became intermittent. If the patient eats an acidulated substance, particularly orange, the region of the left parotid immediately begins to swell, with severe pain and great difficulty in mastication. At the same time, under the skin of cheek a cord can be made out, about the size of the little finger, which can only be Stenon's duct. From the opening of the duct a little saliva

comes out, and the entrance of the duct is not inflamed. The condition of the mouth of the individual is bad, teeth covered with tartar and the gums inflamed. The treatment consisted in catheterisation of Stenon's duct with a glass tube drawn out to a fine point. The sound passes easily into the duct on the right side ; on the left, however, it meets with an obstruction due to a fibrous stricture. On overcoming the latter and withdrawing the glass sound, a flood of saliva spurts forth mixed with a little blood. After this the attacks did not recur. This case is comparable to the fact reported by E. Depré referring to the saturnine parotid gland. The author has shown that the grandular swelling can result either from a parotid cirrhosis or from a simple retention of saliva which he calls hydroparotid. This may be transitory, due to catarrhal obstruction, or chronic and due to sclerotic retraction, as in the case reported.—Claisse (P.) Hydroparotide intermittente. Bull. et mém. soc. méd. d. hôp. de Par., 1898, xv, 140.

Morphinism.--Krafft-Ebing.

In clinical demonstrations the eminent psychiatrist gives his views and treatment of morphinism. He dates the beginning of this artificial disease back to the invention of the hypodermic syringe. In general, he says, the habit is acquired if an individual, after three months use of morphine, is unable to break from its use without great exertion. Attention is called to the necessity of these unfortunate individuals to increase the dosage as the habit becomes more and more fixed. The influence of the poison is both psychic and somatic. Under psychic disturbances come, loss of self respect, loss of feeling of honor and shame. The individual becomes a moral degenerate and will go to the utmost extreme in order to secure the necessary morphine. From the somatic side, the disturbances are of a vaso-constrictor nature and present themselves under the forms of diminished secretion and dryness of the mouth, diminution of gastric secretion, constipation, pallor of skin, cyanosis, diminished urinary excretion, etc. Paralysis may result. The toxic disturbances may frequently be alleviated by the administration of a large dose of morphine. Death may result from heart failure, sudden cessation of the drug, or from sepsis, as a result of dirty hypodermic syringes. The treatment can only be carried out in sanatoria or hospitals. Great watchfulness is insisted on to prevent the morphinist from obtaining the drug; for there is no one who can be trusted less than the morphine fiend. The drug may be taken away gradually or all at once. Generally it will be found most practicable to reduce the amount of morphine gradually. In this form of treatment Krafft-Ebing finds that it is best to begin by lessening the amount ⅓, and gradually reducing it to 0 in from 10 to 20 days. For the last few days distilled water is employed in the way of suggestion. After the cure, the patients are usually in a miserable neurasthenic condition which must be carefully treated after the manner prescribed for such affections, or otherwise there will be a relapse. The convalescence usually lasts a long time. For the sleeplessness which results, he warns against the use of chloral. He gives opium in these cases, and declares that a dose of this drug now and then does not work any danger for the patient as far as the question of abstinence goes.—von Krafft-Ebing. Der Morphinismus. Allg. Wien. med. Ztg., 1898, xliii, 47.

A Rarely Observed Complication of Acute Articular Rheumatism.--Steiner.

The author calls attention to a symptom in acute articular rheumatism which has received but little notice. In 35 short case histories, a number of the patients are reported to have suffered intense pain on pressure over the main nerves and plexuses. The pain may be so intense as to mask the joint symptoms. The author thinks it mostly due to a perineuritis rheumatica. The salicylates and iodide of potassium are recommended in the treatment.—Steiner (F.) Eine bisher kaum beachtete Complication des acuten Gelenkrheumatismus. Deutsches Arch. f. klin. Med., Leipz., 1897, lviii, 237.

BIOCHEMISTRY IN RELATION TO MEDICINE AND HYGIENE.

UNDER THE CHARGE OF
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Experiments with Plasmatic Cell Juices.—Hahn.

As the work of Buchner upon the yeast cells had shown that by a pressure of from four to five hundred atmospheres a juice could be extracted which contained a soluble ferment that would cause the characteristic fermentation when no yeast cells were present, Hahn applied the same method for the purpose of extracting the cell contents of bacteria. He worked with three groups of germs. 1st, cholera and typhoid bacteria; 2d, anthrax and staphylococci; 3rd, tubercle bacilli. In order to obtain the extract of the cholera bacteria, a considerable quantity of agar plate cultures were made. After a day or two there was a well-developed growth of the bacteria, which was scraped off and rubbed up with sand and infusorial earth. The resulting mass was made into a dough by the addition of water, or 20 per cent. glycerine solution, or physiological salt solution. This doughy mass was then placed in a fine filter cloth and submitted to pressure. In this way a solution was obtained which could be easily cleared by filtering through a heavy filter paper. First it appears light yellow, but very often in the course of a few hours the color becomes deeper yellow or often brown. This is probably due to the absorption of oxygen by the proteid solution. The press cake, as a rule, contains only a comparatively small quantity of bacterial cells which have not been broken down. The expressed juice contains a fair percentage of proteid substances, the quantity of the latter, of course, depending upon the amount of water that has been used in the extraction. It is possible to remove the larger portion of the proteid matter by repeating the extraction five to six times. This cannot be made complete, however, on account of the large quantity of sand and infusorial earth which is used in making the mixture. The largest quantity of the proteid matter of this bacterial plasmin, as it is called, is precipitated in the cold by acetic acid, and is not soluble in an excess of this acid, showing the properties, therefore, which are allied closely to the nucleo-albumins. A part of the proteid matter is coagulated upon heating. The expressed juice shows the usual proteid reactions. The expressed juice from the cholera germs, or the cholera plasmin, produces exactly the same results upon intraperitoneal injections of guinea pigs as the live cultures. The plasmin causes an infiltration at the point of injection. By repeating the injections with larger quantities a necrosis results. It is possible to render guinea pigs immune to an intraperitoneal injection with live cholera bacteria by previously injecting them with some of this cholera plasmin. .5 to .6cc of this plasmin is sufficient to immunize them so thoroughly that eight days afterwards they will resist a ten times fatal dose of the virulent germ. The extract produced was specific, as the animals did not show any protection from infection against the bacillus Metchnikoff. The blood serum of these immune animals possessed the property of agglutinating the cholera bacilli. The plasmin obtained from the typhoid bacilli showed similar results, and one cubic centimeter of this bacterial juice was sufficient to protect a guinea pig from an inoculation that is fatal to a check within three weeks. The results obtained with the expressed juice of the anthrax and staphylococci cultures were not so satisfactory. The extract had to be passed through a chamberland filter-tube in order to remove the anthrax spores. The animals which were treated with the extracts from these germs lived somewhat longer than the controls, but were not entirely protected. The tubercle plasmin was obtained in the following way: The layers of bacteria from large quantities of liquid cultures were ground up

with sand and infusorial earth and expressed with water or physiological salt solution. By filtration a clear amber yellow solution was obtained which contained a considerable quantity of coagulable proteids, which, in general, chemically resembled the extract from the cholera germs. The solution can be made germ free by filtering through candles made up of silica, and only 10 per cent. of proteid matter is lost in this process. The solution can be preserved in an ice chest for a considerable time by the addition of 20 per cent. glycerine and 5 per cent. salt. The tubercle plasmin decomposes hydrogen peroxide solution. This property of the extract is lost upon heating to 60 degrees, and is suspended upon the addition of hydrocyanic acid. It can be brought about again if the hydrocyanic acid is driven off by warming in a current of air. The tubercle plasmin acts as a solution of a soluble ferment, according to the test of Schoenbein and Schær. This reaction is not given by Koch's new tuberculin. A number of guinea pigs were treated with this tubercle plasmin. Twenty-three animals were taken, and six of these were controls. These six animals died in from one and a half to four months after inoculation with a virulent germ of generalized tuberculosis. Of the seventeen treated animals five gave negative results. They died from two and a half to three months after they had been inoculated, and showed upon autopsy generalized tuberculosis. Four animals showed a partly positive result; that is, they died after several months of treatment, and showed, upon autopsy, evidence of healing and a somewhat less dissemination of tuberculosis than that which the checks exhibited. Five animals gave a more positive result, as they were alive from one and a half to two months after all the checks had died.* Hahn (M.) Immunisirungs und Heilversuche mit den plasmatischen Zellsäften von Bakterien. Münchener med. Wochenshr. 1897, No. 48.

* These results are similar to those obtained by Trudeau and de Schweinitz with the use of attenuated tubercle bacilli, and are not as encouraging as the results which have been obtained in treating tuberculous guinea pigs with anti-tuberculosis serum. The method used by de Schweinitz for the extraction of the cell contents of the tubercle germ should give the same or better results as the one above described.

The Internal Structure of the Micro-organism.—Ruzicka.

While the structure of the bacterial cells, from a histological standpoint, has been studied to some extent by Bütschli, Nils, Migula and others, the author considers that, by a method of his own, not published in full, the outlines of which consist in the fixing of air-dried cover glass preparations with mercuric chloride, staining with methylen blue and decolorizing with acidified water, material advances in these investigations have been made. By this method the author has studied a number of varieties and forms of bacteria, fungi, etc., and has discovered in them granular bodies which are not the same as those which have been noted by others. These granular bodies which the author found cannot always be detected, nor can they always be demonstrated in all the individuals of the same preparation. This depends partly upon the age of the culture. According to the character of the bacteria the number and arrangement of these granules is also different. The size of these granules, which, when largest, approach very closely to the ordinary cell grains, in many cases are a good deal smaller, and appear to increase with the age of the germ. In the cocci these granular bodies appear to be found more towards the center. In the rod-shaped bacteria, in many cases, there is a little grain found either at one or both poles attached to the membrane, or occasionally two or three grains may be found at the pole. In the fungi small grains could also be determined, usually of different sizes, sometimes of the same size in the same individual. The number and size appears in this instance again to be dependent upon the age of the culture. The role of these grains the author proposes to demonstrate in his more extended publications. Ruzicka (V.). Centralbl. f. Bakt., Feb. 27, 1898, xxiii, No. 8.

Production of a Mucinoid Substance by Bacteria.—Charrin and Desqretz.

Some cultures of the bacillus pyocaneus show a viscous consistency, which has led us to suppose that there is an albuminoid substance analagous to mucin in these liquids. This substance is formed in beef broth cultures prepared in the

ordinary way. There is not any connection between the production of this substance and the formation of pyocanin. It is interesting to note that the bacterial cell produces a substance analagous to that which animal cells and quite a number of vegetable cells produce. It is also interesting to note that in inflammations of the mucous membrane there is frequently formation of a substance which gives some reactions for mucin. In the course of these affections bacteria develop, generally in abundance, and it is natural to think that these bacteria have played an important part in the production of this substance. Some incomplete investigations in the same direction, in connection with the staphylococci, coli communis, cholera germ, permit the conclusion that the formation of this mucous-like substance is not a special property of the bacillus pyocaneus. Various races of this latter germ can produce the same mucous-like body. Charrin (A.) and Desqretz (A.) Production d'une substance mucinoide par les bactéries. Soc. de biol., Feb. 25, 1898, V, No. 7.

Action of the Bacterium Coli and of the Bacillus of Eberth upon the Nitrates.--Grimbert.

In a note presented last year to the Société de Biologie, L. Hugounenq and Doyon (Soc. de Biol. Feb. 20, 1897) announced that the bacillus coli communis and the typhoid bacillus possessed the property of causing decomposition of nitrates with the production of nitrogen gas, and they naturally thought they had come to the confirmation of the ideas of Rodet and Roux in regard to the identity of these germs. The author has recently had occasion to study the same question, and, to his great astonishment, neither the bacillus coli nor the bacillus typhoid show any disengagement of gas from nitrates. He used six varieties of the coli and six of the typhoid. All of these germs give the classic reactions of the species, the production of indol, the fermentation of lactose, and so on. None of the typhoid germs caused the fermentation of indol or the fermentation of lactose. Their identity was controlled by the Widal test. The culture media was as follows: Peptone 1 gr., nitrate of potassium, pure, 1 gr., distilled water 100 grs. In each case both an ærobic and an anærobic culture was made. None of the tubes showed the disengagement of gas. As can be seen, these results were a contradiction to those of Rodet and Roux. Buri and Stutzer have shown that the coli commmnis attacks nitrates only when another germ is present, which they call the bacillus "de-nitrifying." Weissenberg has shown that the explanation of this fact is that this latter germ is capable of decomposing nitrates and reducing them to nitrites when it is alone. In regard to the work of Hugounenq and Doyon, either they worked with a new variety of the bacillus coli communis and bacillus typhoid, or their cultures were contaminated with some variety of the de-nitrifying germ. Grimbert (M. L.). Action de bacterium coli et du bacille d'Eberth sur les nitrates. Soc. de biol., April 8, 1898, V.

The Curative Value of the New Koch Tuberculin.--Baumgarten and Walz.

The authors have made a number of experiments in endeavoring to cure tuberculosis in guinea pigs by means of Koch's (TR). Their conclusions agree closely with those obtained by Trudeau and others, and although the use of TR at present has been largely abandoned, the conclusions are interesting. The average life of the check animals was 87 days; the average life of the treated animals was 69 days. The autopsy did not reveal any appearance of healed organs, and in general it appeared that the injection of small doses of TR did not give rise to any good results, while the larger the amount injected the greater were the ill effects resulting from the treatment. Baumgarten (P.) and Walz (K.). Ueber den Heilwert des neuen Koch'sschen Tuberculins nach Experimenten an tuberculos infizierten Kaninchen und Meerschweinchen. Centralbl. f. Bakt., April 12, 1898, xxiii, No. 14.

CLINICAL DIAGNOSIS.

UNDER THE CHARGE OF

CHARLES E. SIMON, M. D.,

AND

ANDREW STEWART, PH. D.

The Blood in Trichinosis.

In three cases reported, the history and the physical examination and symptoms were not alone sufficient to establish a positive diagnosis. The patients complained of headache, muscular pain and weakness, pain in the side, and chilly sensations; there was fever, diarrhœa, puffiness of the eyelids, cough, œdema, and mottled cyanosis of the extremities, etc. The blood showed in every case a well-marked leucocytosis during the acute symptoms. There was an enormous increase of the eosinophiles, at the expense of the neutrophiles. This last is a very important symptom, if not a diagnostic sign of trichinosis. In the differential count of the leucocytes, in the three cases, the highest percentage of eosinophiles was 68.2, while the most pronounced leucocytosis was 35,000 per cmm. Thayer (W. S.)—A third case of trichinosis with remarkable increase in the eosinophilic cells. Phila. M. J., 1898, i, 654.

A. S.

Effect of Altitude on the Blood.

Oxygen-tension being lessened in rarified atmospheres, the volume of oxygen that can be absorbed by a given quantity of hæmoglobin is, according to Dr. Solly, of Colorado Springs, diminished, consequently, in order to fit the organism for its environment, the quantity of hæmoglobin circulating in the blood vessels must be increased. This is brought about by an augmentation of the number of red cells. In other words, altitude acts as a stimulus to the blood-forming function; which explains the good effect of high altitudes upon anemic patients and consumptives. This but confirms the statements made many years ago by Paul Bert. Altitude and blood-count. Phila. Polyclinic, 1898, vii, 251.

A. S.

Leucocytosis in Whooping Cough.

In the simple whooping cough of infancy there is a leucocytosis remarkable alike for its constancy and intensity. The mean of 192 blood counts was 27,800; 40,000 was often exceeded; the highest count was 51,150. The increase is in the lymphocytes, at the expense of the polymorphonuclear cells. The constant and early appearance of such a pronounced leucocytosis makes it an important diagnostic sign. Meunier (H.) De la leucocytose dans la coqueluche. Presse méd., Par., 1898, vi, 43.

G. W. J.

A Bacillus Closely Resembling the Bacillus of Tuberculosis.

In timothy grass and in the feces of many animals a germ has been found, which startlingly resembles the tubercle bacillus, though its absolute identity therewith has not been established. After placing timothy grass, with sterilized water, in rubber-capped test tubes, in an incubator, for from eight to fourteen days, there may be discovered in many of the tubes an acid-proof bacillus, morphologically and tinctorially identical with that of tuberculosis. This germ was present in the dung of farm animals, which were proven free from tubercular infection. It will not grow in milk, but may be cultivated at room temperature, or in the incubator, on media on which the tubercle bacillus thrives. Moeller (A.) Ein Organismus, welcher sich morphologisch und tinktoriell wie der Tuberkelbacillus verhælt. Deutche Medizinal Zeit., 1898, xix, 135.

A. S.

Eosinophilic Cells in Tuberculous Sputum.

Teichmueller has found, out of 153 cases examined, eosinophilic cells with certainty in 3. Their presence is largely dependent upon the general con-

dition of the patient, and the stage of the disease. The appearance of eosinophiles in the sputum months before the germs can be found shows the struggle of the organism against infection. When the bacilli appear, the defeat of the eosinophiles is easily remarked; either by their decreased numbers, or their entire disappearance. They thus serve as an index of the progress of the disease. In the 42 cases where no eosinophiles could be found, were combined the worst prognostic moments—heredity, great initial progress of the disease, high temperature, complications, and particularly low body weight. The investigation of tuberculous sputum for eosinophiles is of the first importance: 1., as an objective measure of the patient's combative power, 2., prognostically, and, 3., for testing special therapeutic procedures. Teichmueller (W.)—Das Vorkommen und die Bedeutung der eosinophilen Zellen im tuberkuloesen Sputum. Centralblatt f. inn. Med., 1898, xix, 305.

A. S.

Heller's Test for Blood Coloring Matter in the Urine.

Heller's test depends upon the formation of hæmochromogen. Combined with a spectroscopic examination, a most satisfactory result (owing to the characteristic spectrum of hæmochromogen) may be obtained; and it is then by reason of its simplicity and sharpness, possibly to be preferred to all other methods. The combined method gives a positive result where the chemical method alone would still leave some doubt. Arnold (V.)—Ueber die Heller'sche Probe zum Nachweis des Blutfarbstoffes im Harne. Berlin klin. Wochenschr., 1898, xxxv, 283-285.

A. S.

Digestion Leucocytosis and Cancer of the Stomach.

In two out of ten cases of cancer of the stomach Chad-Bourne found a digestion leucocytosis. Therefore, the absence of digestion leucocytosis is by no means of importance as pathognomonic of that condition. It may, however, be regarded as of some collateral value as a symptom. It is best not to consider the absence of digestion leucocytosis as an inherent feature of cancer of the stomach, but rather as due to the local condition of the mucus menbrane of the stomach itself. Chad-Bourne (T. L.)—Beitrag zur Verdauungsleucocytose bei Magenkranken. Berlin. klin. Wochenschr., 1898. xxxv, 31.

A. S.

A New Protozoon Found in Leucemic Blood.

An ameboid protozoon has been found in the blood and viscera of four cases of mixed leucemia. In the blood current it is believed to thrive upon the leucocytes (though capable of life in the plasma) as it grows and develops within them. The parasite is of the acystosporidei variety. Encysted forms have been discovered in the spleen and bone marrow.—Loewit (M.) Protozœnnachweis im Blute und in den Organnen leukaemischer Individuen. Centralblatt f. Bakt., Erste Abtheilung, 1898, xxiii, 206.

A. S.

Myelocytes in the Blood in Pneumonia; and a new form of Corpuscle.

These cells are especially numerous in, if not typical of pneumonia. Rare during the height of the period of fever, they increase with the approach of the crisis. A form of cell hitherto unknown, has been discovered by Türk, which he calls the "irritation form" (Reizungsform). It is mononuclear; the protoplasm turns an intense deep brown on staining with the triacid stain. The nucleus is round, and often concentrically located, without definite margin. Stained with the triacid stain it turns a dirty, blue-green of moderate intensity. These cells partake of the nature of lymphocytes and generally range in size between the small and large mononelears.—Türk (W.) Klinische Untersuchungen ueber das Verhalten des Blutes bei acuter Infektions - Krankenheiten, Wien & Leipz. Braumüller.

A. S.

Significance of the Different Forms of the Klebs-Loeffler Bacillus.

From a study of material taken from the throat of 27 different patients, the following conclusions are arrived at:

1. The short Klebs-Loeffler bacillus apparently produces a toxin of greater virulency than the longer form, although the local manifestations may not be so extensive, 2., the long Klebs-Loeffler bacillus and the streptococci when found alone give rise to a mild type of the disease, 3., the streptococcus is found associated with the Klebs Loeffler bacillus in most of the severe cases. Its special significance is not so clear, but it is possible that by causing a more intense imflammatory reaction it opens avenues by which the toxins of the Klebs-Loeffler bacillus may find more ready entrance into the circulation, plus its own toxin, 4., the apparent beneficial action of the antitoxin of the Klebs-Loeffler bacillus in cases where this bacillus is not present, may be due to the fact that, though the local action of the different microbes varies to a considerable extent, the action of their toxins, as is shown by the similarity of the constitutional symptoms produced by them, present many kindred features. The thought, therefore, arises that the antitoxin of one infection may have an inhibitory effect on the toxin of another, as is shown by the fact that whooping cough and some other infectious diseases have been shown to occur less frequently in vaccinated persons, and some cases have, apparently, been cured by vaccination. Class (W. J.)—Clinical significance of the different forms of the Klebs-Loeffler bacillus. J. Am. Ass., 1898, xxx, 1019.

A. S.

Quantitative Estimation of Indican and Indirubin in the Urine.

The methods in general use for the detection of indican being qualitative are liable to error; deep coloration may be obtained in a small, concentrated quantity of urine, when the actual amount excreted may yet be normal, and vice-versa; again, no two observers see shades alike, etc. The writer's method is based on the precipitation of indigotin by boiling the urine with HCl and $Fe_2 Cl_6$ filtering, and estimating the nitrogen in the precipitate. Remove any albumin present in the urine, and filter it. Add excess of HCl and $Fe_2 Cl_6$ to 500 cc of the urine; boil for one hour, let cool and filter rapidly. After washing the precipitate well with boiling water, estimate its contained nitrogen by the Kjeldahl method. The estimated nitrogen multiplied by 17.9285 equals potassium indoxyl sulphate; multiplied by 7.0 equals the amount of sulphuric acid combined as indoxyl. The latter figure is however not reliable. If the precipitate (above) be washed with 97 per cent. alcohol, the indirubin goes in solution, may be recovered by evaporation and its nitrogen estimated by the usual method. As the figures representing the quantity of indican in normal urine have been estimated by the color method, they are in all probability too small: the author's analyses showing a total elimination of 0.0125 per cent. equals 0.2365 gm in 24 hours, where no coloration was given. Richardson (H.) and Whitney (E. L.) A method for the quantitative estimation of indican and indirubin in the urine. J. Am. Med. Ass., Chicago, 1898, xxx, 920.

A. S.

An Apparatus for the Fixation of Blood-Films.

In the study of hematológy it is of the greatest importance to recognize and determine the artefacts. Chemicals as hardening agents for blood films are unsatisfactory, as there is always a possibility of the presence in them of some slight impurity. The ideal hardening method is, therefore, by heat. A convenient and inexpensive oven can be improvised as follows: Bore two small holes through two opposite walls of a five-ounce quinine can, equidistant, and four inches above the bottom. Draw through them two copper wires on which to support a square piece of wire netting, thus forming a kind of interior shelf. In the lid of the can make a circular hole to carry a perforated cork, through which is passed a thermometer of about 250° C. register. In each of the four lower corners of the can punch a very small hole for establishing a draft: this might be duplicated in the four upper corners. The wire shelf is for the support of the cover glass preparations, smear side up, care being taken not to let them overlie one another and that the point of the thermometer bulb be adjusted in the same plane with them. The oven is heated by

a small gas jet or a spirit lamp, when a temperature of 135°C is reached in from 4 to 6 minutes, the oven being supported on a tripod or other metal stand. A degree or two above 135° in the heating will not prevent good results being obtained.—Bremer (L.) An improvised apparatus for fixing blood-films at exact temperatures. J. Am. Med. Ass., Chicago, 1898, xxx, 858.

A. S.

The Fibrin of Leucemic Blood.

Investigations of Pfeiffer go to show that the blood in leucemia contains somewhat more fibrin than that of normal individuals; blood showing (a less degree of) leucocytosis from other causes, however, is much richer in fibrin, which is probably owing to a difference in the nature of the white cells.—Pfeiffer (T.) Ueber den Faserstoffgehalt des leukaemischen Blutes. Centrlbl. f. inn. Med., 1898, xix, 1–9.

A. S.

Urotic Acid.

A hitherto undescribed nitrogenous body, which promises to give important indications as to how nitrogenous substances are finally transformed in the organism into urea and uric acid, has been discovered in the urine of dogs fed on calf's thymus. On such diet the dogs excrete this body, urotic acid, in twenty times the amount of uric acid.—Minkowski, German Congress for Internal Medicine, Wiesbaden, 1898, Phila. Med. J., 1898, i, 822.

A. S.

The Metrocyte.--A New Blood Cell.

This is a large nucleated red cell, named by its discoverer, Engel, of Berlin. He has found it in the blood of human embryos between the third and sixth month. Its reaction to Ehrlich's tri-acid stain differs from the ordinary normoblast, its protoplasm turning an orange color. Engel also found this cell in cases of pernicious anemia, which without exception ended fatally. This may be considered a further substantiation of Ehrlich's theory, that the degree of malignancy of pernicious anemia may be judged by the extent of the reversion of the blood to the embryonal type. The presence of this cell is of diagnostic significance in distinguishing pernicious from profound secondary anemia. Ibid.

A. S.

Methylene Blue Test for Sugar in the Urine.

To 10cc of the urine add first about 5cc of a solution of sugar of lead (neutral lead acetate, as concentrated as possible) and then, after brief shaking, about 5cc of concentrated basic lead acetate. Filter through double, dry filter paper, and the filtrate will almost always appear water clear and coloress or very slightly yellow. Of this filtrate pour 5cc into a test tube containing a heated mixture of 5cc of methylene blue solution (1gm purest methylene blue in 300cc of water) with 1cc of 10 per cent potassium hydrate solution. Bring to boiling point and let cool. If the urine contain glucose, the blue-black solution lightens, becomes white and finally clear and transparent and takes on a *pale* yellowish tint. The excess of lead settles as a white precipitate to the bottom of the tube. Of urines very rich in sugar a few drops of the filtrate will be sufficient to reduce the 5cc of alkaline methylene blue solution; otherwise take, as above given, an equal quantity. The bleaching of the solution takes usually from 20 to 25 seconds after removal from the flame. Hold the tube quietly, as slight disturbances of the liquid permit of re-oxidation by the oxygen of the air. If, as in concentrated, very dark colored urines, the filtrate from the lead precipitate should still appear distinctly yellow, precipitate with the neutral lead acetate in form of powder, or else dilute the urine in the beginning, with an equal quantity of water. This test controlled by the phenylhydrazine and Fehling reaction, has been applied in a very large number of cases where the patient suffered from the most various affections; and in no case did it prove positive, except in the presence of sugar. Its ultimate delicacy is in dilutions lying between 0.04 and 0.05 per cent. of sugar. The greater the dilution the longer the time required for the reaction. While all sugar-free urine more or less reduces alkaline methylene blue, it has been proved that this power is not due to the presence of either urea, uric acid, albu-

min, kreatin, kreatinin, etc., but is probably vested in the normal and pathological urinary pigments and in glucuronic acid. As all of these substances are precipitated by the neutral and basic lead acetates, and thus gotten rid of, the methylene blue method rises to the first importance as an acccurate and delicate test for sugar in the urine.—Fröhlich (A.) Ueber den Nachweis von Traubenzucker im Harn mittels Methylenblau. Centralbl. f. inn. Med., 1898, xix, 89.

A. S.

The Urine and Blood in Diabetes.

Observations were made on three diabetic and, as control, on twelve non-diabetic patients, to determine if, in the diabetic cases, the pancreas was diseased or not. The salol test was employed, 15 grains being given every 4 hours until one drachm had been taken. The urine was examined 4 hours after the first dose, and every 4 hours thereafter until salicyluric acid had disappeared. It was found that this test, as a means of gaining information concerning the condition of the pancreas, was of little value in cases of diabetes. In a series of 7 cases the reaction described by Bremer with Congo red or methyl blue was obtained in all, but with Biebrich scarlet the results were negative. Contrary to the assertion of Lépine and Lyonnet, the blood in splenic myelogenous leukemia was found to react with Congo red or methyl blue, not like diabetic, but like normal blood. But it was found that the blood in exophthalmic goitre was affected by these stains exactly as is diabetic blood. R. T. Williamson (British Med. J., September 1896) describes a method of diagnosticating diabetes by an examination of the blood. Take 40cm of water, 40cm of potassic hydrate of sp. gr. of 1.058 (a 6 per cent solution), 20cmm of diabetic blood and 1ccm of an aqueous solution of methylene blue, 1:6000. Mix carefully and place in boiling water without shaking. At the end of 3 or 4 minutes the blue solutions have been decolorized and become yellow in color. Shaking the tubes during boiling prevents the reaction, and if they are shaken after decoloration, the original color reappears. This reaction was noted only in diabetics and not in leukemia, Graves' disease or in normal persons. When methyl blue was used (1:6000), the color of the mixture, after the addition of the blood, was not blue but clear reddish-yellow, whether the blood was diabetic or non-diabetic. But on placing the tubes in boiling water, the contents of that containing diabetic blood turned a dirty yellow color, while in the other tube the color remained clear reddish-yellow. If methylene blue be used the reaction is much more striking. The color of the solution after the addi- of the blood is a deep greenish-blue, while after boiling for 3 or 4 minutes the solution containing diabetic blood turns a yellow color, the contents of the other tube remaining unchanged. One case of diabetes gave a reaction with methyl but not with methylene blue. Williamson gets the same results with the urine of diabetic patients, using 20cmm of urine instead of the same quantity of blood. It seems probable that the reaction in both blood and urine depends upon the presence of sugar. For, if the sugar is fermented out of a specimen of urine, decoloration will not occur, while watery solutions of grape sugar (1 per cent) produce the same reactions as diabetic urine. The value of the reactions from a clinical standpoint seems slight. None of these tests are as simple as Fehling's; true diabetes cannot be differentiated from temporary glycosuria, and by Bremer's method, diabetes cannot be distinguished from Graves' disease. Badger (G. S. C.) Some observations on the urine and blood in diabetes. J. Bost. Soc. M. Sc., 1897-8, ii, 118.

G. W. J.

Test for Biliary Pigments in Urine.

Solutions required:—in light-proof bottles—A., 1 per cent. aqueous sol. sulphanilic acid; B., 1 per cent. aqueous sol. sodium nitrite.

Three different modifications of this method are recommended; the best of which is as follows:

Pour into a test tube ½ cc of each of A., and B., and the same amount of urine (not over 2 to 3 hours old) adding a drop of conc. HCl.; shake briefly, whereby, in the presence of bile, a deep violet color appears, which must be im-

mediately diluted with distilled water to amethyst. In urines containing very little bile the amethyst color appears after a few minutes. This test is very much more sensitive than those heretofore in use, and by applying it in over 1,000 cases, under the most various conditions, including the administration to the patients of an extended list of medicines, it has been found to react only in the presence of bile. Krokiewicz (A.) and Batko (J.) Eine sehr empfindliche Reaction auf Gallenfarbstoffe im Harne, als Modification der Ehrlich'schen Methode mit Diazoben zolsulphonsaeure. Wiener klin. Wochenschr., 1898, xi, 173-4.

A. S.

Rapid Method of Estimating Uric Acid.

This method is based on the bulk estimation of urate of silver, by means of the centrifuge.

Apparatus required:—centrifuge; four tubes holding 15 cc and graduated to 1-10cc, to 10 cc; pipette holding 1cc.

Method:—Place in the graduated centrifuging tube 10 cc urine, adding 0.5-1 gm sodium carbonate and 1-2 cc ammonium hydrate. Shake until the sodium carbonate dissolves. This precipitates the earthy phosphates, which are then separated by the machine, allowing the clear, supernatant fluid to be decanted into another graduated tube. Add to it 2cc ammon. hydrate and 2cc ammoniacal silver solution (made by dissolving 5 gm silver nitrate in 100cc H_2O and adding ammonium hydrate, until clear) which throws down the uric acid as urate of silver—a translucent, slimy substance. Separate with the centrifuge and pour off the supernatant fluid. Add to the precipitate at least 5cc ammonium hydrate, thus redissolving precipitated chlorides.and leaving the urate pure. Centrifuge to lowest reading on the tube scale. Multiply each 0.1cc read off by 0.001176 for gms uric acic in 10cc urine, this by 10, again, for gms in 100cc, or the percentage of uric acid. It is well to perform the test in duplicate. Cook (H.)—A new, rapid, and accurate method of estimating uric acid. Med. Rec., N. Y., 53, 373.

A. S.

Studies in Agglutination.

The authors have made a careful study to see if the phenomenon of agglutination results from a passive action on the part of the protoplasmic substances of the microbes in the serum. They practically confirm the results of Nicolle, in that a filtered culture, mixed with a clear antitoxic serum, will, after a time, produce a precipitate which, under the microscope, looks very much like living matter. This precipitate should not be confused with the cloudiness which may often form in the filtered cultures or in the serum upon standing. Widal and Sicard. Recherches comparatives sur le phénomène de l'agglutination en culture filtrée et en culture bacillaire. Soc. de biol., April 8, 1898, V.

E. A. de S.

Therapeutic Notes.

Some years ago Fairchild Brothers & Foster determined to investigate the integrity of preparations dispensed by retail druggists upon prescriptions calling for "Pepsine Essence, Fairchild," whenever there has been any occasion to suspect that substitution was practiced. When dispensers have been caught, the firm has addressed knowledge of the fact to every physician in the city. Only recently twenty druggists were exposed in St. Louis.

In treating a case of necrosis of the tibia three inches above the ankle joint and extending four inches toward the knee, after all diseased points were removed, the cavity was scoured by the bovinine-peroxide reaction washed out with Thiersch solution; then touched up with 25 per cent. pyrozone; and, finally packed with bi-sterilized gauze soaked in iodoform-bovinine. In less than a month of such treatment the cavity was found entirely filled with new

bone and covered with new healthy periosteum.

Careful experiments have shown that somatose in anæmic cases not only causes an increase of flesh and strength, but the actual increase of the number of red blood globules, a fact to which attention has again been lately called by Dr. Maasen, (Wien. Med. Wochenschr.) who found that in all of his cases the quantity of hemoglobine was markedly and promptly increased by this preparation. Owing to its palatability it is greatly relished by all patients.

Dr. Joseph Marshall, of Durand, Mich., has for some years been a very warm admirer of Sanmetto; has found its action marked and well defined in the cases wherein he has used it. In cases of prostatitis with loss of virile power in elderly men he finds its action superb. In chronic specific urethretis, cystitis and all irritable conditions of the urinary tract he finds Sanmetto very efficacious. He does not hesitate to recommend it as a standard preparation.

In regard to the growing conviction among surgeons and gynæcologists that the use of rubber gloves in operative work is the only positive defense against wound infection, Dr. McBurney, before the New York Surgical Society, says that "no change in his own methods has been so eminently satisfactory to him." The Standard Seamless Rubber Gloves are now made so strong and pliable that it is only a matter of time until their use shall become general.

The positive aid and results obtainable from "Gray's Glycerine Tonic Comp." are largely due to its finished and inalterable character as a reconstructive tonic. It undergoes no organic or chemcal change, and the harmonious action of each ingredient is assured, an important and unusual feature, and essential to accomplish the results desired. It neutralizes stomachic acidity, checks fermentation, promotes appetite, increases assimilation and does not constipate.

Despite the constantly increasing cost of barley, wheat, oats, cod-liver oil, quinine and other commodities which enter largely into the composition of their preparations, the Maltine Company have decided to bear the tax of four cents per bottle, which is to be imposed upon their outfit. They do this in preference to reducing the profit of the retail druggist or shifting the tax directly upon the patients.

The action of senna combined with figs is to slowly but effectively evacuate the lower bowels and rectum. This it does without undue liquefaction of the stools, leaving them in a formed condition. California Fig Syrup is pre-eminently a laxative and not a cathartic. Its purpose is to coax and not to coerce nature, and it is the opinion of practitioners generally that it admirably fulfils this function. It does not become progressively inefficient.

A patient reduced by disease and from the effect of anodynes, developed malarial cholera-morbus and for days lay in an amost unconscious condition. As a last resort she was taken to a Boston hospital where the physicians began administering Imperial Granum in very small quantities. After several trials it was retained, and the strength and quantity was slowly increased. After four weeks' treatment taking Imperial Granum only for nourishment she was discharged from the hospital and a few weeks later endured a severe surgical operation from which she completely recovered.

Every bicycle rider, after a hard run, should be advised a bath and a good rub down, and two five grain antikamnia tablets on going to bed. In the morning he will awake minus the usual muscular pains, aches, and soreness. A five grain antikamnia tablet taken before an outing, by picnicers, tourists, bicyclers, and in fact by anybody who is out in the sun and air all day will entirely prevent the headache which frequently mars the pleasure of such an occasion.

Dr. H. J. Patterson, of Portland, Me., writes on June 25th, 1897, that he is greatly pleased with the results that he has obtained from the use of McArthur's Syrup of the Hypophosphites.

TRANSACTIONS OF THE MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA.

EDITING COMMITTEE:

W. W. JOHNSTON, M. D., GEO. M. KOBER, M. D., JAS. D. MORGAN, M. D.

MEETING OF JANUARY 26, 1898. Dr. S. C. Busey, President, in the Chair.

(Continued.)

EXCISION OF THE SAPHENOUS VEIN FOR VARICOSE VEINS.

Dr. Forwood presented two discharged soldiers aged 34 and 48, respectively, on whom he had operated for varicose veins of the legs. In each case the right internal saphenous vein was the one principally affected. These veins had been extremely dilated and tortuous from about the middle of the thigh downward and across the tibia to a point a few inches above the ankle on the outer side, photographs of which were shown.

The skin had become very thin and adherent over the varices at many points on the front and outer side of the leg, where in one case especially there seemed to be danger of hemorrhage from rupture. In both cases the vein had been exposed in the thigh and tied with cat gut and then excised, including all varicose branches from above downward through one long skin incision. The operation was not new but it was not as well known as it should be in view of the splendid results to be obtained under favorable conditions by this method. In cases like these he thought that excision was far better than any of the operations by ligation or compression, heretofore practiced. A little time was necessary for enlargement of the deeper veins to compensate for those removed before the patient did too much walking. Dr. Park of Buffalo in describing the technique of this operation in 1896, recommended, in order to make the veins as prominent as possible, that while the patient is standing, the upper third of the thigh be encircled by a rubber cord, tight enough to obstruct the venous flow without constricting the artery; but this would add very much to the difficulties of the operation and increase the hemorrhage. It was better to pursue the opposite course, and put the patient to bed with the limb elevated and bandaged for a day or two beforehand, in order to have the veins contracted and thickened instead of dilated during the dissection. No tourniquet or constricting band is necessary in these operations.

ARTHRITIS DEFORMANS.

By DR. RUPERT NORTON.

This malady is known under the following names: Arthritis nodosa, polyarthritis deformans, rheumatic and rheumatoid arthritis, chronic articular rheumatism, etc., etc. None of these names are satisfactory, but perhaps the least objec-

tionable one is arthritis deformans. This is a bad term because it simply designates an anatomical condition, which in one form or another, may be found in a variety of diseases; arthritis nodosa is no better for the same reason; the term "polyarthritis" is misleading, for but a single joint may be affected; and any term in which rheumatism, or any of its adjectives, rheumatic, rheumatoid, are used should be discarded, since in all probability the disease has no relation to rheumatism proper, that is to acute articular rheumatism. When we use this latter term we have a very distinct idea of a most definite disease, but when we speak of rheumatism in general, we are speaking in a vague way of certain morbid conditions, whose cause we do not know, but for which unfortunately we have no better nomenclature. For this reason many varied pathological conditions are all classified under the non-descriptive terms rheumatic or rheumatoid.

Arthritis deformans is a disease which has probably existed since time immemorial, as has but recently been proved by the finding of some bones in Egypt, which show the characteristic alterations produced in their structure by this disease.

In late stages patients may be almost free of pain. When a disease runs on thus through a long period of years with intermissions, remissions and exacerbations it is most difficult to find a single cause to account for such a varied manifestation, and one is inclined to believe that at different times, different causes must be at play.

Chronic rheumatism is not a rare disease, whereas arthritis deformans is. They are probably both distinct entities but in a few cases arthritis deformans begins where chronic rheumatism ends, and no sharp division line can be drawn. Chronic rheumatism is a rare sequence of the acute form, but it is more nearly related to it than it is to arthritis deformans, and heart lesions are not uncommon in its course.

The connection between arthritis deformans and tuberculosis has been long a disputed subject, but here we again meet with a difficulty which is so common in the consideration of other diseases, and that is the enormous prevalence of tuberculosis in one form or another.

Authors think that there is a close connection between gout and arthritis deformans, and in the statistics of one English physician, Garrod, the percentage of cases where arthritis deformans occurred in patients who previously had gout, is very large. But in England there is much gout, both mild and severe, and in such statistics the personal equation must not be left out of consideration.

Many authorities lay much weight on the relationship between nervous diseases and arthritis deformans, but when we come to analyze their reasons, it does not appear that the relationship is so close as appears at first sight. In certain diseases of the spinal cord as tabes, syringomyelia, and progressive muscular atrophy, we find certain joint alterations, but these in the first two named, are frequently the result of trauma and inflammation, and usually do not affect the joints in the same way or to the same extent as in arthritis deformans; the affections of the joints in these diseases are rare also.

The early changes in the cartilages and synovial membranes in arthritis deformans cannot be distinguished from those seen in early stages of joint lesions in tabes and syringomyelia, but effusion is more common in these nervous arthropathies and is greater than in arthritis deformans, and also the destructive process of the bones is more extensive and more rapid than that seen in this disease.

It has been suggested that arthritis de-

formans is due to causes acting on the central nervous system, but such causes would act also on general nutrition, and this can hardly be considered a satisfactory reason for attributing this disease to a central nervous lesion.

Again, it is said that cases often begin with symptoms which point to a central or peripheral nerve disturbance, but subjective disturbances of sensation are common symptoms of many general conditions, and due, generally, to auto-intoxication from the intestinal canal. And the atrophy of the muscles is not attended with any loss of sensation.

Such are the reasons given for proving arthritis deformans to be a disease of central nervous origin, but they seem to me insufficient, at any rate, to explain the great majority of the cases. What then, you may fairly ask, is the cause of this disease, if none of the given causes are sufficient to account for a majority of the cases? It is of course impossible for me to give you any definite answer, but new discoveries lead all the time to new ideas and some of the latest bacteriological investigations may help us out here. Choostek has proven almost conclusively, I think, by many and very careful investigations in cases of acute articular rheumatism that the effusions into the joints in these cases are in over half the cases sterile, and that no organisms can be found in the fluid, on the membrane, or in the particular tissue; and from the result of his investigations he is led to believe that the joint symptoms are due to toxic products of bacteria of more than one form, that there is no specific micro-organism. He believes that there is no sharp line to be drawn between so-called true articular rheumatism and the pseudo-rheumatic and rheumatoid affections; his conclusions are wide reaching, and need further study. It is hardly necessary to add that they have already met with contradiction, but the fact that the effusions are sterile is an important one and hardly to be controverted. Now, although some work has been done on this line by Schüller who got exactly opposite results to those of Choostek, yet Schüller's results are open to much doubt, not apparently having been so carefully worked out; and it seems quite fair and reasonable to believe that on further investigation the same results will be obtained in arthritis deformans, as Choostek got in acute rheumatism; and if the joint lesions are due to toxins, the chronic course of the disease with its remissions and exacerbations is easier of explanation. It may be a disease due to auto-intoxication from the digestive tract, or the portal of entrance may have been originally elsewhere. But if Choostek is right in thinking that various organisms may produce acute articular rheumatism, in arthritis deformans, we may, at different times, have different organisms working at different points in the body. Although this explanation at first may seem unsatisfactory and incomplete, yet it is an attractive one and worthy of further careful study.

The treatment should be both internal and external, and must be continued over months if not years.

All sources of local infection, both external and internal should be carefully guarded against, and the resistance of the patient to all sorts of infections strengthened as far as possible. Massage, electricity and baths of all sorts may be employed with beneficial results at various times, but in acute or sub-acute exacerbations baths should not be tried; these then do harm, and are only of service when the disease is in practically a state of abeyance. The best results that have been obtained lately come from the local use of superheated dry air, and where this form of treatment can be employed, it should be systematically carried out.

Hot dry air seems to give better results than steam, but steam baths, sand baths, mud baths, douches hot and cold, can all be tried, and will all help in some cases, while in others there is apparently nothing which can be done which proves itself of real use.

DISCUSSION.

Dr. Thomas Ashe Claytor said: The apparatus for treatment by superheated air consists of a cylinder about 3 feet long and a foot and a half or 2 feet wide, which could be raised to any height. Under this cylinder was arranged a system of gas jets, about 3 dozen in number, which were capable of generating an enormous amount of heat. This cylinder was lined with asbestos, especially thick over the bottom. The treatment was administered every day or every other day, the latter being preferable. The patient was put into a bath robe and the affected limb was covered with flannel. One end of the cylinder was solid and the other was closed with a bag which fitted closely around the limb. The temperature in the cylinder ranged from 270° to 350°. This heat was so great that the outer flannel becomes singed. If any perspiration takes place the limb would become singed, and if any burning be felt the flannel is quickly changed. The patient is advised to drink about a quart of water while undergoing the treatment. This heat lessons the pain so much that the limb can be straightened out after being taken from the cylinder. Patients say that the relief from pain by this treatment is very great. How this superheated air acts upon rheumatoid arthritis or arthritis deformans he did not know, but he did not think it would have much influence on the exostoses about the joints.

Dr. George M. Kober said: Whether rheumatoid arthritis is a distinct disease or a hybrid disease, or rheumatic in its nature and in its manifestations and evolution of symptoms, there was no doubt that the three diseases, dealing with constitutional state of the system, were closely related to each other. This he believed to be due to certain factors in the blood, the result of microbic invaders from without, or to digestive bacteria. So long as these were promptly eliminated from the system through the kidneys, the skin, or other emunctories of the body, everything was well, but if this was interfered with pathological lesions were apt to result. No amount of exposure to cold or wet would produce rheumatism of itself, but if the blood was saturated with these bacteria the disease would manifest itself. This fact explains exacerbations, etc., that occur, and that patients confined to bed and protected from exposure get better. The intestinal tract contains a large number and variety of bacteria, a large number of which were perfectly harmless and probably aided in splitting up organic matters, but under certain circumstances, especially during putrifactive changes, these bacteria will probably evolve toxin, which gives rise to local and systemic infection.

Dr. C. L. Allen said that loss of muscular power and atrophy of the muscles was not peculiar to this disease. He had seen two examples of nervous changes subsequent to arthritis deformans. The deformities were produced by pressure against the spinal canal, thus producing the symptoms of central nervous lesions. Some time ago he had had an interesting case of a man who, in 1896, developed an attack of what was supposed to be rheumatism. The changes, however, were suggestive of arthritis deformans. He had local anæsthesia over portions of the body. There was no clinical evidence of pachymeningitis or syringo-myelia, so that he was led to believe that the symptoms must be due to pressure on the nerves by the deformity of arthritis deformans. He attempted to take a skiagraph, but the attempt was not successful. There was slight atrophy of the deltoid muscles of one arm, and some loss of power on the same side.

Dr. F. B. Bishop said he had used various electrical currents in the treatment of arthritis deformans; with some the galvanic; with some the faradic; with others the static. He had three cases visiting his office every day, and one of them in particular had

made very rapid improvement. In this case he used the static current, and at night the patient used the galvanic current at home. In addition he was placed on a restricted but nutritious diet. He had treated cases by the method suggested some years ago by Salisbury of New York, and many of them had progressed wonderfully under that treatment. Where there was any deposit in the joints electricity was of great assistance. The method of treatment, however, would depend upon the character of the case. Where there was very much swelling and tenderness the static spark was contraindicated; such cases needed the galvanic current. Where the tenderness had subsided a strong static spark was indicated, and the improvement under this method of treatment was more rapid than under any other form of treatment he had ever been able to use. The "ozone bath" in all these cases seemed to help. If a case was anæmic the ozone bath for half an hour every day seemed to do a wonderful amount of good. When the swelled joints were affected he directed them, in addition to the other methods of treatment, to put their hands in the galvanic bath for half an hour at a time. This removes the pain, so that the fingers can be bent and the current allowed to go through the joints.

Dr. Adajah Behrend asked Dr. Norton whether he had ever noticed that patients got along just as well with starchy food as with nitrogenous material, and whether any scientific examination had ever been made of this subject.

Dr. Norton, in closing the discussion, said, in answer to Dr. Allen's question whether the anæsthesia could be due to pressure, that it was impossible to reply to this question. In all those obscure cases of hyperæsthesia and anæsthesia it was necessary to make a careful examination to discover the cause. He did not know of any investigations as to the effects of diet.

Meeting of February 2, 1898.

The President Dr. S. C. Busey in the Chair.

JOINT COMMISSION OF THE SCIENTIFIC SOCIETIES OF WASHINGTON.

The following letters were read:

Washington, D. C. Jan., 28, 1898.
Dr. Samuel C. Busey,
President Medical Society of the District of Columbia.

Dear Sir:—Under instruction of the Joint Commission, I write to report such action as has been taken up to the present time on the application of the Medical Society for admission to the Joint Commission:

At a meeting of the Commission held January 19, 1898, the application was referred to the component Societies with a favorable recommendation. At an adjourned meeting of the Commission held January 25, reports were received from the component Societies, and it appeared that while some had adopted the recommendation of the Commission, others had laid the matter on the table, because it seemed inexpedient to complicate the movement for the reorganization of the Commission into an Academy of Sciences by such modification of present organization as would be necessary to add another society to the number. The Commission therefore voted that the consideration of the application be postponed, and that the Secretary be instructed to state to the officers of the Medical Society that the general sentiment of the scientific societies was favorable to the admission of the Medical Society, but that present action was deemed inexpedient for the reason stated above.

Respectfully yours,
G. K. Gilbert,
Secretary *pro tem.*

Washington City, Jan. 29, 1898.
Mr. G. K. Gilbert,
Secretary *pro tem.* Joint Commission of Scientific Societies.

Dear Sir:—I am in receipt of your communication of January 28, 1898, informing me that final consideration of the

application of the Medical Society of the District of Columbia, for admission to the Joint Commission of the Scientific Societies, has been deferred until the organization of an Academy of Sciences has been completed.

In reply to this communication I must remind you that the application of the Medical Society was made to the Joint Commission of the Scientific Societies, and not to any organization in contemplation or in process of development. It would, therefore, be altogether improper for the Medical Society to permit its application to be referred to another organization for final consideration, of the purpose and plan of which it can have no official knowledge until such organization has been completed, and from which it has been excluded during the transitional and initial periods. I am, therefore, by virtue of the authority of the Medical Society, constrained to withdraw its application for admission to the Joint Commission of the Scientific Societies.

I have the honor to be
Your most obedient servant,
SAMUEL C. BUSEY, M. D.
President of the Medical Society of the District of Columbia.

On motion of Dr. Adams the action of the President was endorsed.

On motion of Dr. Woodward the President was authorized to appoint the number of delegates allotted to the Society, and also to appoint two additional members on the Advisory Committee.

CASE OF DIFFUSE SYMMETRICAL SCLERODERMA, WITH MARKED MUSCULAR ATROPHY. EXHIBITION OF PATIENT.

BY J. C. MCGUIRE, M. D.

B. K., aged seventeen, a well-developed, intelligent, light mulatto girl. Father died some years ago from pneumonia. Mother is a strong, robust woman, who has seldom had a day's sickness. The patient states that some years ago while attending school, she began to suffer from rheumatic pains, loss of appetite and general debility; although she had been strong and well-developed for her age and capable of doing as much work as her mother. She now had to leave school, remain at home all the time, and—to use her own expression—"was absolutely good for nothing." In a short time the joints began to swell and became so stiff she could not fully extend either the arms or fingers.

At first this swelling was soft, and pitted on pressure, but soon began to extend along the arms, forearms and thighs, and to become hard and unyielding. Two years ago she first noticed the limbs were shrinking in size, and that the skin was as hard and unpliable as stiff leather. She entered a hospital and was treated for progressive muscular atrophy. Receiving no benefit she came to this city a year ago, and had not since been treated. At present, on examining the general surface of the body, dark pigmentations, irregular in outline, from a pin head to the palm of the hand in size, are seen scattered over the skin. The size of the arms are reduced very much in circumference. The muscles are so much atrophied that the skin seems to be almost in contact with the periosteum, with the exception of longitudinal ridges of muscles that extend the full length of the arm, and are as hard as wood. The arms cannot be raised higher than the shoulders, nor can the fingers be fully extended. The thighs are also much reduced in size, and in the inner portion of the left thigh, just below the groin, is a distinct swelling about the size of an egg. The ankles are much swollen, firm pressure causing some pain. There is a subcutaneous tumor above the right buttock, the size and shape of a small saucer, and though the skin is firmly attached the

tumor is freely movable in the parts beneath. The integument on the arms, thighs and legs, feel cold to the touch and are as hard as wood. Sensation is impaired. Two small ulcerations are seen on the right elbow. The face is much swollen, and the eyelids œdematous, covered with a reddish, papular rash; though red and looking like a papular eczema the condition has lasted for two years without change. No pruritus and no history of moisture. The skin in this situation is not bound down, but feels rough and dry, and unyielding to the touch. The integument about the lower jaw is hard and smooth and cannot be pinched up into folds. With the exception of general weakness the patient does not complain. From a clinical standpoint the case is of interest from the excessive muscular atrophy, the very large and peculiar shaped subcutaneous tumors, and the red, inflammatory papular eruptions on the face.

SOME RESULTS IN THE TREATMENT OF TUBERCULOSIS WITH ANTITUBERCULOSIS SERUM.

By E. A. de Schweinitz, Ph. D., M. D.
Director Biochemic Laboratory, B. A. I., Agricultural Department.

Though we occasionally find in the literature reports of cases treated with tuberculin as originally prepared by Koch, and in many instances improvement has been recorded, its use as a therapeutic agent has, except in special cases, been discarded. Its value on the other hand for the early diagnosis of tuberculosis in animals has become general, and in some States, as Pennsylvania, the law now requires that all animals that are to be used for dairy purposes shall pass the tuberculin test.

Following the careful methods proposed by Dr. Trudeau, tuberculin offers also a means of positive diagnosis of uncertain cases of tuberculosis in man, and of indicating if the disease after treatment has been arrested or cured.

When tuberculin failed to give satisfactory results as a curative agent, attention was quickly directed to the preparation of a serum on the same principle as the diphtheria antitoxic serum. Maragliano, Babes, Behring and others prepared such a material for the treatment of tuberculosis by injecting horses with tuberculin alone, or a combination of tuberculin and virulent tubercle cultures. After long continued injections of the animals, the serum obtained was claimed to have antitoxic properties, and when this serum was injected subcutaneously into tuberculous animals together with a dose of tuberculin, the fatal effects or characteristic rise of temperature from the latter were counteracted. The strength of the serum was based upon the quantity necessary to prevent a tuberculin reaction. This method, however, did not fulfill all the conditions. In the first place as tuberculin is prepared from the cultures of the germ it is submitted to such a temperature that some of the products of the germ life are changed or decomposed, and hence, tuberculin as used does not represent the poisons of the tubercle germ as they are actually found in the animals suffering from this disease. Consequently a serum which counteracts the fever-producing properties of tuberculin, does not necessarily exert a beneficial influence upon all the phases of the disease in man.

Assuming that while it may not be possible to establish a perfect artificial immunity to tuberculosis in man, but that the disease may be checked by reinforcing the natural resistance which is always present, we have endeavored to

secure in a slightly different way from the one above described a serum useful for treating tuberculosis. In the first place, as reported to the Medical Society some time ago, we had found if an originally virulent tubercle bacillus was cultivated for many generations upon artificial media, that, while it did not lose the property of producing active poisons when so cultivated, it did lose the property of producing tuberculosis in animals when the latter were injected. Furthermore, the animals, as guinea pigs, after a time possessed a very marked resistance to tuberculosis, when they were subjected to an inoculation with virulent tubercle bacilli. that would cause disease and kill the checks in a month to six weeks.

This attenuated germ seemed to offer suitable means for treating animals for the production of a serum with active properties, and was used in large quantities upon both cows and horses. The entire culture medium, including the germs, was at first used for these injections. As the toxins of the tuberculosis germ are, however, found to a large extent within the cell wall, it seemed desirable to bring these into solution as far as possible and inject the animals with the extract. At the same time it should be advantageous to discard the excess of nitrogenous bases, glycerine and pepton present in the culture media and unused by the germ. To accomplish this solution, I have used an ordinary milk shake machine. The live germs in quantity are transferred to the sterilized tumblers and the liquid added which it is desired to use as a solvent. The whole is agitated as rapidly as possible until the cell contents have been pretty well extracted. The residual germ can then be separated and submitted to the same process. This germ extract, as it may be called, containing the soluble products of the cells is then used for injection. As the germs have not been submitted to a temperature above that at which they have been grown, this solution should contain the unchanged products of the cell life. This material is fairly well absorbed by the animals. The serum obtained from cows treated with a large amount of cultures had apparently little or no value in checking tuberculosis in experimental animals. The serum obtained from injecting horses was at first without any apparent influence, but as their treatment progressed, and more and more germ extract was injected, the serum gradually acquired properties of value. When given to tuberculous guinea pigs together with tuberculin the serum would usually retard or prevent the characteristic reaction, and in addition prolonged their lives for a number of months. These results seemed to warrant the use of the serum upon man. Through the courtesy of Dr. E. J. Stubbert, in charge of the Loomis Sanitarium at Liberty, New York, I have been able to have a number of patients treated with this serum. Dr. Trudeau, of Saranac Lake, has treated a few cases from time to time, and Dr. C. W. Richardson and Dr. Street, and recently Dr. Ball, of this city, have used it in small quantities. The effect upon patients having night sweats and high temperature seemed to be in general to reduce the temperature and cause the night sweats to cease. There has also been noticed in some cases after using the serum a tonic influence, with increase of the patient's weight, diminution of expectoration, and, in some instances, apparent cure. To show the effect upon lowering of temperature, if this was really due to the action of the serum, the following cases may be noted:

A young man of about twenty, in good condition, with consolidation at the

apices of both lungs, evening temperature about 100 Fahr., was given injections of the serum beginning with five minims, increasing to 1.8 c. c. every other day for 12 weeks. After the first week there was a gradual fall in temperature until the morning temperature was about 97.5 and the evening between 98.5 and 99 degrees Fahr. During this time the patient improved greatly in physical condition, but was, from time to time, affected with catarrhal gastritis. The number of tubercle bacilli in the sputum decreased, and the consolidation partly disappeared.

Another case, a young man of the same age with consolidation of the left lung, moderate cough, numerous bacilli in the sputum, high evening temperature, 102 Fahr., and generally poor condition, received injections of the serum for three months. Within three months after the first injection the temperature had been reduced to normal, he had gained materially in weight (11 lbs.), the number of bacilli in the sputum had decreased, and the physical signs greatly improved. The cases I have referred to are from the sanitarium, and the following table has been given to me by Dr. Stubbert:

PATIENTS TREATED WITH SERUM FROM BIOCHEMIC LABORATORY, AGRICULTURAL DEPARTMENT, IN CONNECTION WITH GENERAL HYGIENIC AND CLIMATIC TREATMENT ONLY.

Number of Patients Treated 34.

Incipient stage	16
Moderately advanced	15
Far advanced	3
	34

Physical Signs.

Improved	30
Unimproved	4
	34

Expectoration.

Decreased	28
Stationary	6
	34

Temperature.

Decreased	21
Unchanged	13
	34

Cough.

Decreased	26
Stationary	8
	34

Appetite.

Improved	27
Unchanged	7
	34

Tubercle Bacilli.

Disappeared	4
Decreased	7
Stationary	20
Had none	3
	34

Weight.

Increased	25
Stationary	7
Lost	2
	34

These cases, compared with those treated in other ways or under climatic influence only, showed that the improvement with the use of serum was more marked.

In several other cases where the disease was more advanced and almost beyond any treatment, the temperature was but slightly affected. The individuals, however, desired the use of the serum continued, as they claimed it had a bracing effect which they could not secure in any other way. In making a general review of 45 cases treated with this serum at Liberty, we may say that 33 per cent were greatly benefitted and improved by its use. The remainder showed neither good effects nor bad results. In general, the injection of the serum causes no local disturbances. Occasionally a slight rise of temperature may be noted, or a local irritation or

abscess formation at the point of injection. These arise probably from some abnormal condition of the patients or infection during injection, and are not due *directly to the serum*.

The experimental work on guinea pigs and the result on man show that there is contained in the serum from horses treated as above indicated, a substance possessing some value. That this particular substance has not been obtained in its strongest form is also apparent. Some attempts have been made to isolate this active principle, and by a long method of precipitation, solution, reprecipitation and so forth, a small amount of a white powder allied to the soluble ferments as trypsin, etc., has been obtained. This substance appears to exert the same action as the serum from which it is derived.

Granted that a curative substance can be produced in the serum of treated horses, so far obtained, however, in very small amounts, the question naturally arises as to its character, as well as the character of the active principle present in all antitoxic serums.

A review of the work in general seems to warrant the theory that the value of so-called antitoxic serums lies in the fact that they contain in solution one or more soluble ferments which are able to digest and destroy in the animal body the toxic prducts that the germ forms. These ferments are probably secreted by the leucocytes or other cells acting under the stimulation of the toxins first elaborated by the germ of the disease. In the case of a germ like diphtheria, probably the secretions of only one ferment will be stimulated, while in the case of tuberculosis where a large number of toxic substances are produced, it is probable that several ferments are needed to counteract their effect.

These ideas seem to be supported by the properties of antivenomous serums described by Calmette and Fraser. They have found that the serum from an animal artificially immunised to the cobra will counteract the poison of venomous snakes in general. The poisons of snakes seem to belong to the class of true toxic proteids, differing principally in the quantity in the different species. I believe, therefore, th.t a soluble ferment which would destroy the venom of one snake would have the same effect on all. The isolation by Fraser from the bile of serpents and in very much smaller amounts, from the bile of the ox, of a principle which possesses antivenomous properties, is in accord with the theory of soluble ferments, although Fraser himself believes in a more direct chemical neutralization. I do not mean to imply that a distinct separate ferment is produced for the toxins of each germ, but simply that certain ferments can be secreted by the leucocytes or other cells under certain conditions. Some germs require about one of these ferments for the digestion of their particular product. The toxins of another germ require a second ferment; the toxins of a third germ require both; while all these ferments are needed to destroy a large variety of toxins which a fourth germ produces. This probably accounts for the difficulty in treating tuberculosis. This bacillus produces at least three classes of poisons, a necrotic acid, a fever-producing substance, and one that acts as a direct poison. These are apparently more stable than the toxins produced by some other germs, and hence more difficultly and more slowly attacked by the soluble ferments. Just as different ferments digest the different classes of foods, so are two or more of these special ferments necessary for the destructions of the different germ poisons.

The application of Koch's tuberculin known as T. R., prepared by extracting finely ground virulent bacilli, has not in general, judging from the reports of many cases, given the hoped-for satisfaction. As noted by Trudeau and Baldwin and others, the material may contain live tubercle bacilli which are capable of producing disease, and as I am informed that the firm at Höchst has discontinued the manufacture, there is good reason to believe that some unlooked-for difficulties have been encountered by the originators of this treatment.

Another method of treating tuberculosis has recently attracted attention, viz: the use of so-called oxytuberculin and oxytoxins in general. The first work in this direction was done by passing an electric current through the solutions of the toxins of the different germs. As this action always took place in the presence of salt, some hypochlorite was first formed, and this in turn partly destroyed the toxins. In reality, therefore, when this electrolysed material was injected into animals a weak toxin was really used, and it is well known that immunity can be proposed by repeated small doses of toxins. The so-called oxytuberculin is said to be prepared by digesting tuberculin (which contains salt, 4 to 7 per cent glycerine, pepton, nitrogenous bases from the meat, and a small amount of the fever-producing principle which the germ forms) with hydrogen peroxide at 100 degrees C. for several days. Sodium hydrate is then added to the solution, the precipitate formed filtered off and the filtrate neutralized with boric acid. This mixture is the product called oxytuberculin. Submitted to an analysis it was found to contain 6 per cent solid matter, about 65 per cent of which or 4 per cent of the whole was mineral salts, chiefly sodium phosphate and borate. In addition some sodium glycerate was present. I am unable to speak as to its remedial properties, except that it has not appeared in my hands to cure tuberculosis in guinea pigs, and I fail to understand why a mixture of this sort, largely a solution of sodium salts, should be called a specific.

Whether further application of the serum treatment in its present form will continue to prove beneficial, and give better results, or whether this must be materially modified, we cannot say. The results obtained certainly show that the efforts are properly directed.

Though many individuals hold that on account of the slight evidence which can be found in the clinical history of tuberculosis, there is little to lead us to believe that immunity ever occurs in the natural course of this disease, the experiments of Dr. Trudeau, and also of the writer, certainly show that artificial immunity is possible. In reporting the general results of some of his work, Dr. Trudeau says: "102 pigs were used, 36 of which were checks, and 66 were vaccinated with attenuated tubercle bacilli. All were then inoculated with a virulent germ. The average life of the controls was 50½ days, and of the vaccinated animals 154.3 days. The latter lived nearly three times as long as the controls." In some cases they lived 18 months or longer. If the lives of experimental animals can be protected for six months to two years, and even longer, it is fair to assume that similar methods of treatment should give very much better results in man.

When the study of serum therapeutics and the treatment of diseases of bacterial origin are freed from a commercial aspect, still better results can be expected. It is just as necessary in this work that

chemical principles should be considered, as the fact that there is a specific germ that causes tuberculosis.

Perhaps it may be possible to prepare antitoxins by artificial means outside of the animal body, but it seems, from present results at least, that the active live cell and the intervention of the laboratory of the animal body are necessary adjuncts in the production of these curative substances.

MEETING OF FEBRUARY 9, 1898.

DR. S. C. BUSEY, President, in the Chair.

A CASE OF CHRONIC PERICARDITIS IN A CHILD. WITH SPECIMEN.

BY GEO. N. ACKER, M. D.

A. E., aged 11 years, male, colored, admitted to the Children's Hospital January 11, 1898. Mother living and in good health. The child was breast fed until three years old. From nine months was given in addition regular table diet. He was apparently healthy up to six years of age when he had measles. After the measles he did not seem to become strong and had some cough for four or five months. When six and a half years old he had pneumonia which lasted a "long time." Since that time until the present he has had a cough. He would improve and be able to attend school but from the slightest cause would contract a cold which would confine him to bed for a few days. He has not been strong for a long time often complaining of feeling tired after any exertion. He has never suffered from dyspnœa.

Present History. For the past three weeks the child has been confined to the bed with violent pains in the chest. Caught cold about a month ago and the cough has become frequent and painful. It is worse at night and interferes with his sleep. Five days ago he had a hemorrhage from the lungs. He lost about a pint of blood which was bright red and frothy. Had another hemorrhage last night of the same character but much smaller in amount. He has lost flesh rapidly. Has had profuse night sweats every night for past three weeks. Appetite has been poor and bowels constipated.

Present Condition. The child is emaciated, expression anxious, skin dry. The lower limbs are kept flexed. The abdomen is somewhat distended.

Respiratory System. Restricted chest movement; respiration apparently painful. Right lung; dulness over middle lobe of lung posteriorly with bronchial breathing. Few mucous rales over the upper part anteriorly and posteriorly. Left lung; few mucous rales. There is a frequent dry metallic cough with great pain referred to left lung.

Digestive System. Tongue coated; pharynx congested; complains of pain in the epigastric region; abdomen somewhat distended; liver normal; spleen normal.

Circulatory System. Heart sounds rapid and indistinct; churning sound heard with each beat; this is intense at apex.

Urinary System; negative. Cervical glands enlarged. Skin dry.

Nervous System. Objects to much light and loud sounds. Temp. 103.8; pulse 130; Resp. 48.

January 17. The child has been very restless during the past twenty-four hours. He cries out frequently with pain which he refers to the epigastric region and left chest. 9 a. m., temp. 101.8; pulse 132; resp. 48. 9 p. m., temp. 102.2; pulse 130; resp. 46. January 18, 9 a. m., temp. 101.2; pulse

132; resp. 48. 9 p. m., temp. 99; pulse 130; resp. 50. January 19 Expectoration tinged with blood; restless during the night; one very dark stool yesterday; respiration shallow and very painful. 1 a. m., temp. 98; pulse 100; resp. 42. 9 a. m., temp. 101.4; pulse 132; resp. 32. 9 p. m., temp. 102.4; pulse 138; resp. 40. January 20. Three light colored stools today; general condition same; takes nourishment fairly well. January 23. The boy has steadily grown worse; coughs frequently; heart sounds the same. 27th. Died today. The temperature since the 20th has ranged from 99° to 100°. The pulse 138 to 148 and the respiration 34 to 40.

Necropsy 15 hours after death. Rigor mortis present. Left pleura adherent to chest wall throughout its surface; also to diaphragm; pericardium and left pleura bound together. Left lung floats in water. Surface covered with inflammatory products. On section there is a yellowish fluid mixed with air. The middle lobe and posterior portion of lower lobe slightly congested. Yellowish fluid escapes on section. Heart much enlarged; chronic adhesive pericarditis. Weight with great vessels and some surrounding tissues 16.5 oz. Heart dilated. Valves appear to be normal. The other organs normal.

DISCUSSION.

Dr. Glazebrook said: A heart weighing 16 ounces in a child of 11 years is a very large heart; it is evidently a case of abnormal compensatory hypertrophy. The condition in the lung was an acute pneumonia, and such a compensatory hypertrophy could not have followed this in such a short time The hypertrophy was too great to be due to pericarditis, there must have been an obstruction of the arterial system somewhere.

Dr. Acker said: The history showed that the child was healthy up to 6 years of age. Had measles at that time, and never seemed to be well after. Had pneumonia at 6½ years. The trouble with the heart dates back to the attack of measles. The hypertrophy and pericarditis were due to the measles and subsequent disease of the lung.

THE CAUSES AND TREATMENT OF RETRO-DEVIATIONS OF THE UTERUS.

By Dr. J. Wesley Bovee.

The wide and radically differing opinions expressed at the recent meeting of the American Medical Association by men in the front rank of practical American gynecologists prompted the presentation of this paper. In that extraordinary discussion M. Price said retro-deviations of the uterus were always due to atrophy of some part of the uterus or ligaments and that all forms of surgical treatment should be discarded. On the contrary his brother Joseph said hypertrophy and enforced sterility were the great causes, while Eastman thought sexual over-indulgence was the most prolific cause and recommended the tolerably free use of the barbed wire pessary. Another suggested making the patient walk on all four extremities. Goldspohn favored Alexander's operation; R. B. Hall condemned it because of the large number of herniæ following it and H. P. Newman extolled it because it cured hernia. And so went the discussion with the result that many listeners must have thought the different speakers were referring to different subjects or that retro-deviations varied widely in neighboring cities. We must confess that had we not been able to fairly well estimate the personal equation in many of the speakers we would have left the meeting very much confused by the discussion.

The known causes of retro-devia-

tions are many and new ones are suggested almost daily. No doubt this state of the organ is often found in young girls that have had no symptoms referable to the pelvic organs and in some of these may be a congenital deformity. It is very common in older girls that have received so-called "advanced information" concerning these organs and have been employing vaginal douches for cleanliness after menstrual periods, who have been subjected to the powerful influence of civilization, such as wearing tight corsets and tight skirt bands with heavy skirts, wearing scanty costumes on special occasions even at menstrual periods, overtaxing the nervous system in school with insufficient out door exercise, sedentary habits, prolonged distension of bladder or rectum or both, vicious habits, traumatic injuries and many other causes. Later in life additional causes are noticed. Abortion, instrumentally induced and otherwise, endometritis and metritis from various causes, specific infection, subinvolution of the uterus, localized edometritis at the placental site, tumors of the cervix or of the body of the uterus and others that might be considered as conditions of the organ itself, act as predisposing or exciting causes of backward displacement of the uterus. Other sources of this condition are still more numerous. Prolonged supination and wearing tight abdominal binders during the lying-in period, injuries to the pelvic floor or to uterine ligaments, general relaxation of the pelvic structures, new growths in neighboring organs, posterior shifting of the lower pole of the axis of abdominal pressure so common with a pendulous condition of the belly wall, neuroses, enfeebled nutrition, dragging downward of the posterior vaginal wall in perineal repair and operations on the posterior vaginal wall; straining at stool, rectocele, prolapse of rectum, inflammatory disease of the appendages, peritonitic adhesions of the uterus to bowel or to vermiform appendix, posterior adhesions of the appendages and pelvic exudates, all are very commonly found to be aetological factors in uterine retro-displacements. There can be no question of the tendency of prolonged distension of the bladder to produce stretching of the round ligaments at least. The author has in his care at present an unmarried patient, about 30 years of age, in whom intra-abdominal shortening of the round ligaments failed to permanently relieve retroversion and in which retention of urine for a day at a time is so habitual, that he found it advisable to teach her the proper use of the catheter. That distension of the rectum by hardened feces pushes forward the cervix uteri and that still further pressure arises from efforts, either successful or otherwise, at stool, can not be successfully denied.

From ignorance abortions are taken by some patients as a matter of course and no treatment solicited unless an emergency of some form arises, and the uterus enlarged by the pregnancy may so remain until from its weight and the engorgement and weakening of its ligaments it no longer remains in its normal position. Again, many abortions, for various reasons, are purposely concealed, and such patients will endure great suffering later from evil consequences rather than confide the secret and receive proper treatment. Martin of Berlin, eleven years or longer ago, called attention to the effects of diseased processes at the placental site, a frequent one being backward displacements. Subinvolution of the uterus after labor and abortion is very common, arising from a number of condition

as lacerated cervix, inertia, general lack of nutrition and endometritis. Inflammation of Fallopian tube, ovary or peritoneum lining the pelvic cavity are very common causes, indeed, of backward displacements of the uterus and usually adhesions result therefrom. Intraperitoneal exudates in the pelvis will often be almost completely asborbed, leaving a network of adhesion bands between uterus and neighboring structures. If the tubes and ovaries be severely inflamed they drop toward the bottom of the Douglas' pouch, become fastened and drag the uterus downward; growths in the posterior wall of the organ may gradually weigh it down. In some cases the backward displacement may be complicated by anteflexion of the organ or a retroflexion, by backward displacement of the cervix. In such cases faulty condition of the lower uterine ligaments, as shortening of the utero-sacral or of the utero-vesical, plus some other pathological state, exists or has existed, either contemporarily or otherwise.

In some of them, however, malnutrition may have been the original cause and been later complicated with some of the other various agents. If the anterior vaginal wall be attached to the cervix very low it tends to pull the cervix forward and at the same time allows the utero-sacral ligaments to unopposedly pull the uterus backward. As the attachment of the latter mentioned ligaments is to the upper part of the cervix the tendency is to bend the cervix on the body and, if exaggerated or the uterus firm, to pull the whole organ over toward the sacrum. If the broad ligaments chance to be relaxed this tendency is enhanced. Normal broad ligaments resist such action. If we will call to mind the amount of attachment to the anterior wall of the uterus and broad ligaments this will the more readily be realized. The round ligaments, curving as they do, outward and forward in close relation to the broad ligaments before passing into the abdominal wall, do not materially effect the movements of the uterus unless it be displaced backward nearly or quite to the perpendicular. From their insertions and the nature of their structure the leverage they possess is easily comprehended. If they be abnormally weak or inelastic their function may be entirely removed. The converse is also true, though in a lesser degree from the constant action of the bladder. The structural attachments to the anterior wall, already mentioned, include the utero-vesical ligaments and therefore no further mention will be here made of their function.

Treatment. The treatment of these displacements, as might be inferred, does not consist of any routine procedure. Work of that character has retarded advances along proper lines. When men of great reputation, such as took part in the Philadelphia discussion mentioned in the early part of this paper, denounce so absolutely certain operations and procedures and recommend for all cases some one or two operations, the minds of the smaller men are liable to be forced into contracted and bigoted lines of thought and the pathological conditions fitted to the one or two operations rather than the suitable method of relief adapted to the particular case.

To us it seems very plain that in some cases the treatment will be along the line of improvement of the general health-cases where the tonicity of structures of the patient, and not alone the pelvic tissues, is at fault. In all cases the use of the corset should be prohibited and almost as positive interdiction of supporting clothing by the pelvis. General and local

massage may be of great benefit in many cases. Electricity in properly selected cases will also be found of great assistance. Properly fitting pessaries have also their field of usefulness but must be as small as can be worn and yet give sufficient support to maintain the uterus in a forward position. They should never be considered curative, however. But these measures of local treatment, whether applied separately or in combination, should be used only when the uterus is freely movable, for cases of retro-deviation uncomplicated by growths, adhesions, pelvic floor injuries and other pathological conditions. When such measures fail in the simple cases or when other pathological conditions are present, other methods of relief will be necessary and these must be surgical. Even now no one surgical operation will be found a cure all. A much enlarged cervix will require amputation; relaxed or torn utero-sacral ligaments will have to be shortened or repaired. Perhaps a curettement must be added to these and even lengthening of the anterior vaginal wall or upward diplacement of the cervical attachment of it may be needed. Perineorrhaphy and other plastic vaginal operations are often demanded. Sometimes, though rarely surgical relief of prolapsus recti will be indicated. These milder operations even have a limited field. Alexander's operation will be called for in some mild or simple cases. In our judgment its application has a very limited field. It is only to be used when the uterus is of normal size, the appendages and uterus free of adhesions and pathological lesions, and the pelvic floor, as well as the anterior and posterior uterine ligaments, normal. It is often done and properly so, at the same sitting with operations about the vagina for injuries to the pelvic floor and ligaments mentioned. It is generally admitted to be applicable only to the class of cases mentioned. Hernia has frequently been reported as one of its sequelæ and, as mentioned earlier, it has been said that hernia may be cured by it. In many cases the ligaments have not been found and in others failure has resulted though it is probable that in many of these the unhappy result followed attempts to fit cases to the operation—cases that should have been treated in some other manner. Certain it is that two wounds are made and in a dangerous position as concerns hernia. And further that if the wounds become infected the uterus will be very likely to drop backward with severed round ligaments.

When disease of the uterus or appendages, of the vermiform appendix or other structures exist that requires invasion of the peritoneal cavity the question arises whether the vaginal or the abdominal route of invasion should be followed. The vaginal offers a few advantages over the abdominal route and, per contra, has some disadvantages. For reaching the pelvic portion of the pelvic cavity this route is very popular in Europe, especially in Germany, France and Belgium, countries in which, we are told, abdominal section does not find its highest elaboration. Mackenrodt, A. Martin, Wertheim and Duhrssen, of Germany, particularly, have highly extolled anterior colpotomy for exploration of the appendages and uterine periphery, even for removal of appendages, if necessary, and for fastening the uterus forward by vaginal fixation, by vesical fixation or by shortening, intraperitoneally, the round ligaments. This kind of pelvic work has been considerably practiced in this country. Only when future impregnation is impossible vagino-fixation of the uterus is, perhaps, applicable, because of

the failure of resulting adhesions to yield sufficiently to permit the rapid ascension of the pregnant uterus into the abdominal cavity, abortion or complicated labor following. Separation of adhesions to the uterus and appendages, with perhaps resection or other conservative work upon the tubes and ovaries, leaves the opportunity with the few moments additional for shortening the round ligaments before pushing back from the vagina the uterus. Stitching the uterus to the top of the bladder, as planned and executed by Dulrssen, seems plausible and, though perhaps difficult, should give good results if absorbable material be used for suture. The vaginal route seems to be attended by less shock than the abdominal and requires more time. It does not give as good opportunity for careful inspection of parts that may be diseased; the period of convalescence is shortened; the trouble with abdominal wounds and the danger of ventral hernia are absent. By the abdominal route more rapid work may be done, occasionally an important desideratum, and a better opportunity is offered for a careful inspection of the pelvic and abdominal contents. By this route we may do ventro-fixation or ventro-suspension of the uterus according to whether future sterility is probable or improbable. If the appendages are removed and the uterus is healthy ventro-fixation is strongly indicated. If they are left we may choose between ventro-suspension and intra-abdominal shortening of the round ligaments. The former of these two we believe to be preferable as it has always given us the most satisfaction.

It is very probable that an anterior vaginal wall that is in a state of tension after these operations will command our attention and call for surgical interfeence.

Though a small proportion of cases may be relieved by hygienic, tonic and other forms of medicinal treatment, the great majority will require some form of surgical treatment. In a general way we have endeavored to mention the indications of the several surgical procedures commonly employed for the relief of these displacements. We would like to strongly urge the necessity of ascertaining the absence of all kinds of adhesions to the uterus and appendages before resorting to the use of pessaries and the necessity for great care in giving advice to patients as to precisely what is necessary for relief.

DISCUSSION.

Dr. I. S. Stone said: The majority of cases that come to the specialist are surgical, the cases that are mild and can be treated by pessaries being treated by the general practitioners. Several years have passed without treating a case with a pessary; he has had two cases within the last six months where retroflexed uteri have been cured with pessaries. Not so much was done by the use of the pessary as by carrying out a combination of favorable circumstances. He does not think that any one pessary will cure any one case. He gave the cases massage and gymnastics given by a nurse under his immediate direction. As he gets older he is more anxious to find some more methods along this line of treatment in order that a great deal of the work of the surgeon may be done away with. New methods of treatment should be applied along the line of prevention.

Dr. Jos. Taber Johnson: Dr. Johnson took the ground, in discussing Dr. Stone's paper last year that a great many of these cases did not need surgical treatment and would do better without it. While a good many patients had been relieved by the Alexander operation, properly performed, a good many cases have come back with hernias and with adhesions which gave the patient much trouble; not only adhesions

where the round ligaments were shortened, but adhesions produced by ventral fixation, etc. The true principle in the treatment of all diseases, medical and surgical, is to remove the cause, and if retro-deviations of the uterus have 40 or 50 causes, all of these causes cannot be removed by shortening the round ligaments or ventral fixation. The true principles should be a little way from the constant resorting to surgical operations for the relief of retro displacements and pay more attention to the removal of the causes producing them.

Ventral fixation or Kelly's operation is liable to produce trouble in pregnant women from adhesions due to too great success of the operation. Indeed many surgeons have abandoned Kelly's operation in child bearing women on account of the difficulties and dangers produced by a too adherent uterus during pregnancy and labor. Trouble has occurred from the sutures that have been used. Catgut absorbs too soon and lets the uterus down. Silver wire would never let go, and holds the uterus too firmly. Dr. Martin of Chicago modifies Dr. Fowler's operation who uses no sutures whatever. He dissects out the urachus, or suspensary ligament of the bladder and makes a ligament of it; this is pulled through the top of the uterus by Cleveland's ligature carrier and is sowed into the abdominal incision. Dr. Martin did not like this operation. He now leaves out the urachus, and dissects off a narrow strip of peritoneum and uses it for a ligament to suspend the uterus. He is greatly pleased with this operation after performing it 27 times.

Dr. I. S. Stone said that he did not consider the bad results of Kelly's operation, but to the operator and his assistants, on account of not having a clean petitoneum and leaving in sponges. He referred to 3 cases where Kelly's operation was done in which pregnancy subsequently occurred; the last one was delivered by the late Dr. Sudduth, the torn perineum and cervix standing the strain, and that the uterus is now in perfectly normal position.

Dr. Bovee said: The operation of Dr. Martin mentioned by Dr. Johnson was a modification of that of Dr. Fowler, of Brooklyn. Dr. Henrotin in discussing Dr. Martin's paper in the Chicago Gynecological Society had expressed the opinion that the fragile peritoneal coat of the uterus could not well stand such rough handling as required in this operation and he had the same belief as Henrotin. We know the covering of the uterus is here very thin and very intimately attached. To lift up a strip of it and pull through the opening a strip of tissue as is made by Dr. Martin, which, by the way, includes fascia as well as parietal peritoneum, seemed bad surgery and too much traumatism for the purpose. The peritoneum receives its nutrition from subjacent tissues and to separate any considerable amount of it is risking future sloughing of it. Kelly's operation is the best ordinarily for intra-abdominal fastening the uterus forward. We should remember it does not fix the uterus to the abdominal wall as does ventro-fixation. On the contrary it allows the uterus to drop back to its normal plane with a resulting new ligamentous attachment to the abdominal wall. The uterine attachment of it is behind the fundus and always tends to prevent the organ going backward too far. It is of sufficient length to permit ascension of the uterus in to the abdomen during pregnancy. In nearly all cases that have been followed by pregnancy it has not seemed to interfere in the least. A great deal depends on cleanliness in ventro-suspension as unclean work may result in either ventro-fixation or dropping back of the uterus without ligamentous connection with abdominal wall. Vagino-fixation is not justifiable in child bearing women but may be done when appendages are removed.

Meeting of February 16, 1898.

The President, Dr. S. C. Busey, in the Chair.

Dr. Lamb exhibited the following specimens:

1. Specimen of ovary of cow, the surface of which showed a ruptured Graffian follicle. The cow was slaughtered the day after it had been with the bull.

2. Specimen of a new-born dog showing double thorax, abdomen and pelvis and 8 limbs; the technical name is Thoracopagus; the junction being at the front or side of the thorax; perhaps the commonest form of double malformation. The mother was an ordinary Indian dog as found among the Sioux Indians; in cleaning off the young animal the mother tore away the abdominal integument so as to cause protrusion of the intestines and the death of the animal.

3. Specimens of red hepatization of lung and acute pericarditis. From a colored man, age 24, who was in hospital 5 days. There were old adhesions of lower lobe of right lung with œdema, some red hepatization and pleuritic lymph; upper lobe normal. Left lung showed red hepatization throughout; recent pleuritic lymph and general recent adhesions. Cloudy swelling of liver and kidneys.

THE URIC ACID DIATHESIS IN ITS RELATION TO DISEASES OF THE SKIN.

By T. N. McLaughlin, M. D.

It frequently falls to the lot of the general practitioner, to prescribe for patients suffering with most persistent dermatological lesions, which can not be ascribed to any general or local cause, which is apparent at the time; but which is excited by a diathesis, the lesions being an external manifestation of an internal disturbance.

These are the cases which persist for such a long time, the existence of the patients being almost unendurable, subject to frequent relapses, and drifting from one physician to another in hope of relief.

Jonathan Hutchinson has defined Diathesis to be "any condition of prolonged peculiarity of health giving proclivity to definite forms of disease." That such a condition may and does exist is admitted. When we take into consideration that each individual is able to appropriate a certain amount of nourishment, which after being digested has to pass through the liver for further oxidation, and then be distributed throughout the system; should there be an excess or if the oxidation has not been perfectly performed the circulating fluid contains substances which are not utilized in the general economy, and are not in a proper form for elimination. This condition must throw extra work upon the excretory organs of the body, and the kidneys being unable to eliminate this excessive accumulation—the skin's having to assist in the performance of this function—may be easily irritated. Now since the liver is the principal organ concerned in this process of oxidation, any disturbance of the function of this organ may produce this condition.

We all appreciate the close sympathy existing between the kidneys and the skin, this point is illustrated every day, and is one of great practical value in relieving many distressing conditions. Thus conceding that the skin as an excretory organ, in certain disturbed conditions of the system, serves as a means of eliminating these injurious products from the blood, we can easily see how a disturbance of the equilibrium existing between the kidneys and the skin may be a cause for the production of certain lesions where this diathesis exists.

Lithemia is a condition of the system in which there is an excess of uric acid or its salts in the blood, and is usually accompanied by a fulness of the head, vertigo, insomnia, dyspepsia, constipation and nervousness. This results from imperfect oxidation of the nitrogenous material, and the urine contains a large quantity of this waste. The dis-

posal of uric acid is its conversion into urea, and for the reason set forth this is checked.

My observations extend over a period of years, and a concise report of a single case will convey to you the idea of the type of patient I refer to, without burdening you with a long series of histories.

Chronic Eczema (Papulo-Squamous type.)

Case 1. A man about 50 years of age had suffered for more than 20 years from occasional paroxysms of gout, in his feet, which attacks were usually preceded by the appearance of the eruption upon his arms and legs, and then over the body. He was very nervous from the burning and itching sensations which annoyed him both day and night. He complained of headache, indigestion, and constipation. The urine was of a high color, diminished in quantity, with a brick dust sediment, specific gravity 1034. The day after my first examination there was an attack of gout in his right foot. This man was a good liver, ate heartily of all kinds of food and had his wine for dinner. Under the treatment instituted the paroxysm soon subsided, and the eruption disappeared for a period of six months. He then began to indulge his appetite for rich food and wines, when the eruption again developed, which was followed in a few weeks by another attack in his foot, when he again placed himself under my care. The same plan of treatment was again employed, and in a few weeks the eruption and the other evidences of a disturbed condition of his system subsided. This patient while pursuing the course of treatment as outlined for him has escaped both the eruption and the other constitutional symptoms; but with each digression there has been a return of the skin disease which has been followed by the inflammation of the joint unless the treatment was employed. Now what shall we do for such patients. The first thing is to examine the urine of all cases, particularly if the eruption has existed for any length of time, and then each case must be treated individually. Murchison states that "habitual lithæmia often results from the patient taking more food than can be converted into tissue or disintegrated in the liver."

The old axiom "that these patients should eat to live and not live to eat" is one that furnishes us with the key to the treatment. Abstemiousness at all times is essential. Most patients will fare best upon milk with one of the alkaline waters until the excessive acidity of the urine has been reduced. Meats must be used sparingly, once a day is usually sufficient, and in many cases they should be prohibited.

Fothergil wrote that "lean meat, raw meat minced, and beef tea are so much poison." There are patients who absolutely require meat and they will not thrive when they are deprived of it, so it is with the other foods which as a class should be proscribed, for what is one man's food is another man's poison. Sir Henry Thompson advised that sugar in all its forms, and wherever met with should be prohibited. All highly seasoned foods and made dishes, as well as those usually considered difficult of digestion, pickles, cheese, etc., should be avoided. The starchy foods should be used sparingly. All the vegetables growing above ground except tomatoes I have found to agree very well with these patients. Fresh fish and game may be used occasionally. All fried food should be avoided. As stated before each patient must be treated individually, and no diet can be rigidly enforced. Another point which I consider of the greatest importance, is the proper preparation of

the food, for here lies the secret to most of the forms of indigestion, which may ultimately develop a case, or aggravate an already existing condition. As a rule these patients drink a very small quantity of water. The various lithia and pure spring waters at our disposal will be found exceedingly beneficial. The bitter saline waters are also indicated. All alcoholic preparations are injurious, and when possible they should be prohibited. When it is necessary to give a stimulant, Scotch whiskey and gin, appear to be the least harmful.

In the general management of the case we must look for our best results. Frequently a change of habit from a sedentary to an active out door life will meet the requirement. In horse back riding, bicycling, boating and golf we combine exercise in the open air while we are giving them recreation. The amount of exercise must be stated and your instructions must be faithfully observed.

Bathing is the best means we have of stimulating the action of the skin. Turkish baths once or twice a week give excellent results, and the cold bath every morning with a vigorous rubbing of the skin is exceedingly beneficial, when they are too severe a bath at a comfortable temperature should be taken each day. I have refrained from speaking of the medicinal agents to be employed, for we have no ready to fit line of treatment, and it must be selected to meet the requirements in each individual case, just as you have to order your diet according to the individual; and it is just here where we will obtain our results—satisfactory if we give special attention to every detail, and disappointing if we are not vigilant and exacting in our demands.

DISCUSSION.

In answer to a question Dr. McLaughlin gave the following statement of the treatment advised: All sweet and highly seasoned foods were excluded. The amount of exercise was systematically arranged; horseback riding was insisted upon, together with Turkish baths twice a week, and local applications to the skin. Sodium baths were used to remove the scales and after that tar and oil of cade were applied. For the gout an active purgative was given —colocynth—and citrate of lithia. As long as the patient followed this line of treatment he was entirely free from the trouble, but when he took his wine for dinner, etc., the gout returned to be followed by the itching and the outbreak.

Dr. McGuire said: In regard to the skin disease being caused by the uric acid diathesis, he did not believe that the treatment of gout cured the eczema in this case, but that the building up of the general system and the general hygienic management of the case cured the eczema; but that the treatment for gout had nothing whatever to do with the result. He stated that, if the patient had been suffering from chronic constipation or rheumatism, and this had been cured, it would have benefited the condition.

Dr W. W. Johnston said: With regard to the uric acid diathesis or gout, the views of that disease had changed so much and were so opposed to previous conceptions of the disease that it might be well to present the modern explanation of gout and to show how it bears upon the question of the association of the uric acid diathesis and skin diseases.

I. What is gout? It is not the presence of uric acid crystals in the urine, for it has been demonstrated that in gout there is often less uric acid relatively in in the urine than there is in a perfectly healthy person. The presence of uric acid in the urine is not due to the fact that that particular urine does not hold the uric acid in solution. Garrod examined the urine of 17 patients affected with gout and found there was no increase in the uric acid. Therefore, gout, or uratœmia and uratosis (Roberts), and uric acid in the urine are two entirely distinct conditions. Persons may have uric acid in the urine and have no gout at all. Children sometimes pass large quantities of uric acid without gouty symptoms.

Hence these two conditions are entirely different. Gout is not uric acid in the blood, for uric acid does not exist as such in the blood, but in the form of urates, and these only as a trace in healthy men. The quadri-urates are soluble in blood serum, but if these become bi-urates by taking one atom of base they then precipitate in crystalline forms and they precipitate just in proportion to their number; *i. e.*, if there is a great deal in the blood, the precipitate will be very abundant. Sodium bi-urate is best dissolved in pure water. Bicarbonate or chloride of sodium solution added to water hinders the solution of the salt and favors the precipitation of the urates. The blood always contains sodium salts.

II. What will cause an attack of acute gout? Under certain circumstances as the result of food products or when the kidneys do not excrete the quadri-urates, these accumulate in the blood, and are converted into bi-urates. When the blood reaches a certain stage of saturation sodium bi-urate precipitates in crystals. The point of saturation has been determined by Sir William Roberts. The precipitation takes place in the sinovia, in fibrous tissues and in the cartilages throughout the body.

III. Why does this occur more readily about the joints than anywhere else? An analysis of the different tissues of the body shows the reason very clearly. This crystallization takes place more easily in the tissues which have a larger amount of sodium salts. This is seen in the following table:

	Sodium salt per cent.
Blood serum	0.70
Lymph	0.70
Synovia	0.80
Cartilage	0.90
Fibrous tissue	0.70
Blood corpulscles	0.20
Brain	0.20
Muscle	0.08
Spleen	0.04
Liver	0.02

IV. Why does precipitation take place in the blood? The blood is in a state of motion and crystals do not precipitate as well in a fluid in motion as in a state of rest. The joint is in a state of rest and therefore the precipitation in joint tissues takes place much more readily than it does in the blood. Frierichs has shown that animals kept in stalls have more sodium salts in their blood than when they are in a state of exercise. This bears upon what we know to be true. In an experiment by Roberts a bone encrusted with urate salts was suspended in water in which a slight amount of sodium salts had been added. It was 8 months before any solution of these urate deposits had taken place, and 12 months before they were all dissolved off. In pure water they were dissolved in about 4 weeks. This shows that the solubility is enormously diminished by presence of the sodium salts in the blood.

V. In gout we have a great many symptoms that are not in the joints, particularly symptoms relating to the nervous system. Now, if the acute manifestations in joints are due entirely to the precipitation of urates and the mechanical irritation of these urates, what are the manifestations due to when they are connected with the nervous system? Crystalline deposits have been found in the skin, palms of the hands, soles of the feet, in the ears, about the eyelids. If this is true, it demonstrates beyond all doubt that acute manifestations in the skin are associated with gout, and if the crystals have not been found it is because they have not been looked for. It is probable that the nervous symptoms are due to crystalline deposits in the sheaths of nerves and in the brain itself. It is known that chronic interstitial nephritis is due to these deposits in the intertubular structure of the kidney. If crystalline deposits take place in the joints, tendons, cartilages, kidneys, and fibrous tissues throughout the body it is probable they can be deposited elsewhere. On theoretical grounds, gout crystals can be deposited in the skin and if so they would produce acute manifestations there.

Treatment of Gout.—If these facts are correct, they bear very closely on the question of treatment. The excess of urates in the blood leads to crystalline precipitation; urates come from the food ingested. They are not extracted from the tissues. Beef, chicken, eggs, game and all such proteid foods favor the pro-

duction of urates. Foods containing a small amount of nitrogenous matter as vegetables, fruit, oysters and fish are better. Alkalis are of no value. You cannot diminish the tendency to precipitation of these crystals. You cannot increase the alkalinity of the blood by medicines. Moreover the Natrium salts should not be given, because they favor precipitation of urates. Potassium salts do not hinder this precipitation outside the body and therere is no reason to suppose they do inside. The administration of alkalis does not have any effect upon the course of gout. The same may be said of piperazin and lithia, for if there is no uric acid in the blood, and they are solvents of uric acid, they can be of no service. The true treatment of gout, therefore, is a treatment directed to an appropriate diet but there is no known drug that has any effect whatever upon the solution of urates in the blood.

Dr. McGuire expressed himself as having very decided views in regard to any diatheses—so-called—causing a disease of the skin; the theories of Bazin, Hardy and others are at the present time given up by most dermatologists. He expressed surprise at one statement made by the last speaker in regard to the increased amount of uric salts in the blood of those who suffer from gout. Though Garrod claimed there is an increase of uric acid, Haig states though there is a less amount of alkalinity there is a less amount of uric acid in the blood. Cullen held that gout was primarily an affection of the nervous system. According to Osler the essential nature of gout is unknown. Granting the proposition made by Dr. Johnston that there is a deposit of urates in the skin, this may cause an outbreak of eczema without question, anything, in fact, that will irritate a skin predisposed to eczema, will cause the disease to appear. He says that it is not alone because there is a deposit of urates in the skin that the eczema breaks out, if the cuticle had been irritated by a mustard plaster, the disease might be set up and continued for years, but a mustard plaster could not be given as a primary cause for eczema, the deposit of urates when it does occur is simply a local irritant. He states that in gouty subjects it is true that these deposits are found but thinks it hardly fair to state that they would be found more frequently, if looked for more diligently. There is no line of medicine more thoroughly gone into than the pathology of cutaneous diseases. He believes that the term "gouty eczema" is a misnomer and can only be understood in the same sense as we would refer to malarial eczema, rheumatic eczema, etc., that is any disease that will cause general debility may be the cause of skin disease in one who has a susceptible, vulnerable skin. About half of all cutaneous diseases are some one of the manifestations of eczema. Gout is one of the commonest diseases we have; the diseases often co-exist but it by no means follows that the one causes the other. Psoriasis is not connected with gout in any way, Prof. Unna has declared that it is due to a parasite.

But little is known about the causation of skin diseases or even diseases in general outside of those maladies that are caused by micro-organisms.

Dr. A. F. A. King said: In conformity with Dr. Johnston's remark that urate of soda actually crystallized in joints that were at rest, it was noticeable that the great toe joint was a favorite seat of gout. This joint was little used by corpulent gouty persons in walking; to call this joint into full play required that the individual should run; such persons did little or no running. Moreover a typical attack of gout usually began in the small hours of the morning after the joint had been in a condition of absolute rest during sleep in bed. A few crystals having thus formed, would constitute nuclei about which others would form in rapid succession; hence the sudden agony of an acute attack of gout. Some of the older members of this Society, Dr. King said, were familiar with his favorite hobby that many much deplored diseases were really conservative processes misunderstood; they were comparatively small evils designed to supplant greater ones. In a state of nature the function of gout, in conformity with this view, might be set down as follows: It was conceivable

that a community of savages (without the unnatural environments of civilization) might become subjects of gout. Combinations of season and vegetation might render game so plentiful that the savages become gouty from over indulgence in game foods. In a state of nature, the savage would have to "catch his hare" before cooking it. But an acute attack of gout in the foot would prevent his running to hunt and catch game. His over indulgence in food would thus be stopped. Perhaps it might be said that his companions, seeing him thus disabled would still supply him with game; on the contrary, it is far more likely that the miserable subject of gout, peeverish, irascible, irritable (as they usually are) would be so disagreeable that no unchristianized brother savage would have anything to do with him. He would thus be left alone, nursed by nature, to work out his own cure by abstinence, until his foot became so far well as to permit him to get up and hunt game for himself.

DR. MCLAUGHLIN: Referred to the treatise of Duhring where it is claimed that the diathesis does exist and where the relief of the gout has cured the eruption. He said that it is one of those questions that can be argued indefinitely, we are constantly finding some new panacea and in a few weeks abandoning it to take up something else.

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THE

NATIONAL MEDICAL REVIEW.

VOL. VIII. WASHINGTON, D. C., JULY, 1898. NO. 2.

Original Articles.

SOME OBSTETRICAL CASES.

THOMAS C. SMITH, M. D.

Washington, D. C.

Within a recent period the following obstetrical cases have occurred in my practice, and they are presented to the readers of the REVIEW with the hope that they may be found interesting.

The first case is that of a young primipara, colored, admitted to Freedman's Hospital. Convulsions occurred as soon as labor began and she was unconscious at the time of admission. When I saw her the convulsions were still in progress and the patient deeply comatose. Examination revealed a vertex presentation in the first position. The cervix was fully dilated and the waters had escaped. The head was high in the pelvic cavity. Chloroform anesthesia was induced and the axis-traction forceps applied. When the head was brought to the vulva, the Hodge forceps was substituted and delivery of a living child readily effected. A slight tear of the perineum occurred which was stitched. There was no trouble with the placenta.

The patient did not recover consciousness for four or five days and then only a little at a time. When the state of unconsciousness passed away it was discovered that the woman had developed puerperal insanity and from this she had not entirely recovered at the time of her removal from the hospital to her home, about three weeks after delivery. The latest information I have concerning the patient is that she is improving but not yet right in her mind.

On admission the urine was examined and found to contain a great quantity of albumin but no casts. The albumin gradually diminished and had entirely disappeared at the time she was taken away by her friends.

The interesting points in the case are the profound and continued comatose condition originally developed along with the convulsions, continuing after the subsidence of the latter and being followed by puerperal insanity. I will not try to explain these phenomena.

Case two occurred, also, in the Freedman's Hospital. Primipara, colored, about 20 years of age. In labor when admitted. Waters ruptured early. On examination the cervix was found to be well dilated. The cord was prolapsed and pulseless and along with it there presented a foot and hand. Under anesthesia the feet were brought down and the body readily followed. The head, however, could not be delivered until

forceps was applied, when delivery was completed without injury to the mother. The prolapse of the cord, which the attendant had been unable to replace, caused the death of the child. The interest in this case attaches to the unusual presentation—foot, hand and cord.

It is seldom that we are called upon to perform craniotomy, yet the following case seemed to demand that course inasmuch as the child was dead.

This patient was also a primipara. The waters had escaped the day before I saw her in the hospital, and the cord which had prolapsed when the membranes ruptured was protruding from the vulva. Its shriveled condition clearly proved that the child was dead. The cervix was well dilated and the head at the superior strait. The uterus firmly embraced the child. A single effort to apply the forceps showed that this instrument would not avail. The woman was exhausted from the long labor and with the consent of the surgeon in charge I perforated the head and with a good deal of difficulty effected delivery. No harm was done the mother who recovered without untoward symptoms.

I was influenced to perform craniotomy in this case for the following reasons: The child was dead; the mother was exhausted; the amniotic fluid had escaped and the uterus was firmly contracted on the child; the contractions of the uterus had not advanced the fetus in the least; turning would have involved danger of rupture of the uterus or greatly endangered the life of the woman who was already exhausted by the prolonged and ineffective labor. If the child had been living the treatment would have been altogether different.

Cases of face presentation are infrequent. In thirty-four years I have met with only three cases. Two occurred in my own patients; the third was seen in consultation. My first case occurred in a pluripara who was fortunate in having a capacious pelvis. The chin was anterior and, aside from a somewhat tedious labor and a badly discolored face in the child, there was nothing of interest to note. The second case was seen in consultation. The child was already dead. The labor had been tedious and the physicians in attendance had given nature ample time to complete her work, which she was unable to do. The chin was beneath the symphysis. The head was readily delivered by forceps, but great difficulty was experienced in delivering the body. The case illustrated the fact which is so familiar to all, that while a living child seems able to help itself a dead one has to be helped. The mother made a satisfactory recovery.

The third case, which occurred in April of this year, was as follows: The patient, white, primipara, 20 years of age, was taken in labor early in the morning. On examination I could make out a head presentation but owing to the slight dilatation of the cervix, and the high position of the head, I could not satisfy myself of the part which was presenting. Labor continued slowly during the day and when I was summoned in the evening the parts were dilated and a face presentation with the chin to the front was readily recognized. The face had not descended into the pelvic cavity and the uterine contractions did not seem to have much effect. I determined to place the patient under the influence of an anesthetic and apply forceps. As soon as my assistants arrived the lady was anesthetized and the axis-traction forceps applied at the superior strait. Before making traction I passed my finger to the chin and drew it down behind the symphysis. I was greatly surprised as well as pleased at the facility with which the head was brought down. When the

perineum was reached the Hodge forceps was substituted for Tarnier's and delivery speedily and satisfactorily effected. The child was somewhat asphyxiated and some time elapsed before it was thought to be out of danger. The mother recovered without any complications whatever.

Face presentation with the chin to the front may be considered safe if the labor is not unduly prolonged. Unfortunately tedious labor is the rule in this class of cases. Hence to effect speedy delivery after full dilatation of the cervix should be regarded as good practice. To change the position of the head by rotation or flexion, after the discharge of the waters, would not accomplish any good purpose. Rotation without flexion would induce a position in which delivery would be impossible. To flex the head would cause an occipito-posterior position which would insure a labor as difficult and tedious as that associated with the condition already existing. True it is that nearly all authorities claim that occipito-posterior cases rotate when the head reaches the perineum. I am sorry to say that my patients have not been rotaters, for many is the case in which I have waited for the rotation, which seldom came, and it rarely happens that I have a presentation of that kind where I do not have to apply forceps. To attempt to flex and rotate at the brim would, in my judgment, be bad practice as already said. Version is not called for. The use of forceps early in the case, when dilatation has been completed, is in the interest of the mother and insures the safety of the child. Waiting too long on nature in these cases, will greatly increase infantile mortality.

Correspondence.

Editors NATIONAL MEDICAL REVIEW,

DEAR SIRS:—I have read with a great deal of interest the suggestions that are being made to medical writers by the Philadelphia Medical Journal. The admirable rules which, I believe, we owe to Dr. Billings, to find what one wants to say, say it, stop and affix a proper title, have been amplified and emphasized, and there have been added other suggestions which, if followed, would vastly increase the effectiveness of journal articles and, doubtless, lighten the burdens of the editor also.

All of us who have had occasion to search the Index Catalogue and Index Medicus for corroborative literary evidence or the histories of pertinent cases, must have been especially struck by the fact that titles are rarely adequate or sufficiently comprehensive. This is one of the chief sins of medical writers to which the Philadelphia Medical Journal has very properly called attention. But there is another of equal magnitude. How rare it is in books or journals to find, when an authority is quoted, a reference clear enough and comprehensive enough to enable us to tell if the original is worth looking up and to find it in a moment if we so desire. As a consequence, in the preparation of anything like an elaborate paper, a large amount of valuable time must be wasted in verifying references and often the search has to be abandoned in despair. It is just as easy to quote correctly and fully as incorrectly and imperfectly. In every case, when referring to a journal article, for example, there is no difficulty in giving the name and initials of the author, the full title of the article, the name of the periodical and its place and date of publication with the number of the volume and of the pages covered by the paper. All this can be done without trouble and with the utmost brevity by following the method of quotation pursued in the Index Catalogue and Index Medicus, and it would be most desirable if all medical authors were to adopt and adhere to this plan. N. N. P.

The Commencement exercises of the Medical School of the Columbian University were held in conjunction with the other Schools of the University on Wednesday, June 1. More than 200 students were graduated from the various Schools. Over 6,000 people were present to witness the ceremonies which were unique and impressive.

THE NATIONAL MEDICAL REVIEW,

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WITH THE CO-OPERATION OF

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AND

THE MILITARY SURGEON,

A SUPPLEMENT,

UNDER THE CHARGE OF

Colonel WILLIAM H. FORWOOD, Assistant Surgeon-General U. S. Army.

OFFICE: 1437 L Street, N. W.

WASHINGTON, D. C., JULY, 1898.

Notices and Reviews.

ATLAS AND ABSTRACT OF THE DISEASES OF THE LARYNX. By Dr. L. Grünwald. W. B. Saunders, Phila., 1898. Price, $2.50 net.

The object of this book according to the author, is to help the beginner in the art of observing and interpreting; each picture, therefore, is accompanied by the necessary data in the form of a short history. Moreover, his work presents a valuable aid to the physician who has few opportunies of seeing diseases of the larnyx and yet wishes to be able to recognize them. The illustrations are arranged solely according to external appearances, without regard to the nature of the disease. The author has a double purpose in pursuing this plan; in order to train the eye by comparing conditions similar in appearance, though differing widely in their true nature, and in addition to make it easier to find the illustrations which most resemble the particular case to be diagnosed. The American editor very aptly says that the beginner will find here a series of pathological conditions, illustrated with a remarkable fidelity to nature, that it would undoubtedly require him a number of years to duplicate in actual practice; while the veteran, however rich his experience, will note a precision, a finesse in diagnosis that cannot fail to be instructive and, perhaps, even inspiring.

ATLAS OF LEGAL MEDICINE. By Dr. E. Von Hofmann. W. B. Saunders, Phila., 1898. Price, $3,50 net.

In the preface to the translation of this remarkable work it is very aptly said that there is no field of science in which the value of illustrations is greater than in forensic medicine. A volume, such as the one Von Hofmann has given us made up chiefly of photographs and original drawings of various lesions and pathological conditions, taken directly from actual cases, supplies to every physician and student an enormous array of medico-legal data, which could scarcely be acquired alone and unaided. The author, until his death a few months ago, was perhaps the ablest living expert in his chosen domain of work and the Medico-Legal Institute of Vienna, of which he was Director, is possibly the greatest institute of legal medicine in the world. With such a combination it is no wonder that the Atlas of Legal Medicine should be a veritable treasure house

of information. This book will enable the practising physician, as well as the student of medicine, to become acquainted graphically with the most important occurrences of medico-legal interest.

TRANSACTIONS OF THE AMERICAN PEDIATRIC SOCIETY. Vol. IX. 1897.

Under the editorship of Dr. Floyd M. Crandall, the Pediatric Society issues another volume of transactions containing many papers of undoubted value. The volume opens with "The Evolution of Pediatric Literature in the United States" by Dr. S. S. Adams, the President of the Society. It is too bad that the modest example of this gentleman has not been followed by all his confreres. He has done well to avoid displaying an inverted pyramid of titles. Dr. G. N. Acker reports "Two cases of Meningitis" and Dr. Holt has a brilliant article on "Abscess of the Brain in Infants." Dr. Booker's Case of Congenital Diaphragmatic Hernia" was most interesting on account of the long period of clinical observation. There are some amusing things in the discussion of Dr. Scharlau's "Synopsis of Fifty-six Cases of Empyema" This society is doing good work and every volume issued by it is well worthy of preservation.

A MANUAL OF HYGIENE AND SANITATION. By Seneca Egbert, A. M., M. D. Lea Bros. and Co., Phila. 1898.

It is a real pleasure to read such a book as the author has given not only to the profession but to all who are interested in the preservation and promotion of health and the prevention of disease. It is not claimed that this volume is thoroughly comprehensive or even a compendium of the whole scope of hygiene. It is hoped, however, that its perusal will serve as an incentive to further and more extensive reading; for it is believed that the study of hygiene and sanitation will yearly continue of greater importance in social and professional life. The book contains three hundred and sixty-eight pages divided into thirteen chapters in which the author treats of practical disinfection and the means of avoiding preventive diseases, together with the adaptation of diet to the prevention and cure of perversions of nutrition. He discusses also the air we breathe, the water we drink, the food we eat, the soils and surroundings of our dwellings and communities, and the means of recognizing, avoiding correcting or removing all impurities affecting any of these. He has, moreover, something to say (and he says it well) of climate and meteorology; clothing and shelter; the care of the sick that they may not endanger the well; the abuse of stimulants and narcotics, the desirability of chaste and temperate living; and the true value of exercise and rest.

CHARITIES IN THE DISTRICT OF COLUMBIA. PART III. Historical. Washington. Government Printing Office. 1898.

Mr. Charles Moore, clerk of the joint select committee to investigate the charities and reformatory institutions in the District of Columbia, has edited and compiled these historical sketches which will prove of the greatest value to all who are interested in charitable work. The editor does not claim perfection for his accomplishment as he was hampered by want of time and by the fact that in most instances, and even in the case of some of the most important institutions, the records were both meager and scattered. It is a pity that the sketches should have been written from the standpoint of the institutions, this fact in some instances mars the value of the sketch as true history. It is but just to say, however, that where there have been controversies, reference is made to the criticisms. As Mr. Moore very justly says, the District of Columbia has contained, and still contains a surprisingly large number of benevolent people who have given freely of time, of professional skill, and of money for charity. Since the report of the joint select committee was made to Congress many changes have been made in the management of District charities, not the least of which was the withdrawing of the detail of a police officer as agent of the Humane Society.

Progress of Medicine.

GENERAL MEDICINE AND SURGERY.

Treatment of Infantile Diarrhea by Sterilized Water.

In the treatment of infantile diarrhea two indications are to be met: 1st. To unload the bowels as rapidly as possible of fermentative materials; 2nd. To insure antisepsis of the alimentary tract. The first indication is fulfilled by the exhibition of purgatives. In meeting the second, an enormous number of antiseptics of feeble power, as their action shows, have been employed. To avoid the renewal of conditions favorable to the growth of bacteria is an important factor and no worse culture medium can be thought of than sterilized water. The results that the observer has obtained through the use of sterilized water have been very gratifying. In all cases, vomiting ceased immediately. Of 13 cases, 6 were cured in 2 days, 1 in one day, 3 in 4 days, 2 in 5 days and 1 in 6 days by means of a diet consisting simply of sterilized water. Aside from one case, the author has never had to keep the patient on this restricted regimen for more than 6 days even in the severest cases, and has always been able to check the vomiting immediately. Monjour (C.) Traitément de la diarrhée infantile par l'emploi systématique de l'eau sterilisée. Bull. méd., Par., 1898, xii, 225.

A New Symptom of Typhoid Fever.

A symptom which may be of value in making the diagnosis of typhoid fever has been observed by Filipowicz. It consists in an abnormal yellow coloration of the palmar surface of the hands and plantar surface of the feet. In comparative observations in diseases other than typhoid, this yellow coloration was never met with, and the author thinks it occurs in enteric fever only. It is met with at all ages and very early in the disease; it lasts from the first day until convalescence, when it disappears and the normal rosy color of the palmar and plantar surfaces returns. Filipowicz (W.) Ueber ein bei Ileo-typhus an der Handfläche und an der Fuss-sohle zu beobachtendes Phänomen. Centralbl. f. d. med. Wissensch., Berl., 1898. No. 11, 178.

A New Symptom in Scarlet Fever.

The author has observed (in 79 out of 100 cases) a new clinical sign not mentioned in text-books. When it is most characteristic it appears as a paresis of the extremities. The patient complains of lack of power in moving the hands and feet. This paresis is, however, exceptional. Most frequently there is observed a swelling of both hands with a sensation of formication. The swelling is sometimes wanting, and then only the prickling sensation is complained of. The sign appears during the period of eruption, exceptionally before it, and its duration is variable. It may be fleeting, lasting only a few moments and may never return. Usually it is more persistent, appears several hours after the eruption and lasts two or three days ordinarily with interruptions. It sometimes appears as late as the third or fourth day of the eruption. The author thinks it is a valuable sign in cases of scarlatina sine eruptione. He has not been able to find it in other eruptive diseases. Meyer (P.) Nouveau sign clinique observé dans la scarlatine. Presse méd., Par., 1898, No. xx, March 5th.

Hypertrophic Pyloric Stenosis (Stenosing Gastritis.)

The occurrence of this form of hypertrophic stenosis of the pylorus is not very frequent but is of great importance from the standpoint of diagnosis and treatment. After considering the pathology and literature of this disease, Boas reports 3 cases in detail in each of which the diagnosis was confirmed by laparotomy undertaken for the relief of the condition. The diagnosis can often be made after careful consideration of all the symptoms. The continuous stagnation in conjunction with peristaltic movements speaks for stenosis. The absence of HCl and ferments indicates deep seated organic changes in the mucous membrane. The course of the disease, with alternate increase and decrease of the symptoms, with periods of

gain and periods of loss in weight, the improvement observed under carefully selected diet, all indicate a slowly developing benign process. Nevertheless the diagnosis of this condition from other benign stenoses and from some cases of carcinoma cannot always be made. In the diagnosis between hypertrophic pyloric stenosis and cicatricial pyloric stenosis (ex ulcere) it should be remembered that in the former there is no history of hemorrhage and there is no HCl, which is usually present and increased in ulcerative stenosis. In primary atonic ectasy there is no history of a previous gastritis of any severity, which is almost always the case in the form of stenosis under discussion. It is so universally present that Boas gives the name "Stenosing Gastritis" to it. The greatest difficulty is found in excluding gastric carcinoma, but in some instances it is possible to do so. The age of the patient and the clinical history are the most important factors. Carcinoma occurs after middle age as a rule; hypertrophic pyloric stenosis is more common in youthful persons. The history of the case is likewise of importance. The occurrence of periods of improvement found in nearly all cases of hypertrophic pyloric stenosis is exceptional in carcinoma. Metastases, ascites, lymphatic enlargements, hematemesis, all indicate the malignant nature of the stenosis. The presence of tumor does not decide the condition, as it may be present in benign as well as malignant conditions. It is only by considering all the clinical and anamnesic details that a diagnosis can be made, and then frequently it is only a probable differential diagnosis. The prognosis is bad when operative interference is not undertaken, for the patients die of gradually increasing inanition. Through gastro-enterostomy, if successful, the life of the patient can be saved. Boas (J.) Ueber hypertrophische Pylorus Stenose (stenosirende Gastritis) und ihre Behandlung. Arch. f. Verdauungskrankh., Berl., 1898, iv. Band, Heft i, April 1st.

The Relation of Intestinal Putrefaction to Certain Dermatoses.

The author has undertaken to discover if any relation exists between intestinal putrefaction and dermatoses. He used one healthy person as a control and 8 patients with skin disease. He did not determine the number of bacilli of putrefaction in the stools, as nothing like a normal standard exists. He attempted, therefore, to gain an idea of the amount of putrefactive products produced in the body by quantitative determination of the loosely combined sulphates in the urine. This of course, does not give any direct knowledge of the extent of intestinal putrefaction. But the author thinks, in auto-intoxications it is not the amount of intestinal putrefaction alone that is to be considered, but rather the quantity of toxins in the blood which occasions clinical symptoms. The result of the researches was entirely negative in that an increase in loosely combined sulphates could not be made out. Heveroch (A) Ueber die ursachlichen Verhältnisse der Darmfäulnis zu einigen Dermatosen. Wien. med. Wchnschr., 1897, No. 44 and 46.

Amylolytic Ferments.

Wyatt Wingrave, M. R. C. S., Eng. (Assistant Surgeon to the Central London Throat and Ear Hospital) states that he has made crucial comparative examinations of many malt extracts and of Taka-Diastase, the tests being conducted both chemically and clinically. He summarizes as follows:—1. Taka-Diastase is the most powerful of the starch or diastatic ferments and the most reliable since it is more rapid in its action—*i. e.*, "it will convert a larger amount (of starch) in a given time than will an other amylolytic ferment." 2. That Taka-Diastase seems to be less retarded in its digestive action by the presence of the organic acids (butyric, lactic, acetic), and also by tea, coffee and alcohol, than are saliva and the malt extracts. This is an important point in pyrosis. 3. That all mineral acids, hydrochloric, etc., quickly stop and permanently destroy all diastaic action if allowed sufficient time and if present in sufficient quantities. 4. That Taka-Diastase and malt diastase have, like ptyalin, no action upon cellulose (uncooked starch). All starch food should therefore be cooked to permit of the starch ferment assisting Nature in this function. Lancet., Lond., May 7, 1898.

CLINICAL DIAGNOSIS.

UNDER THE CHARGE OF
CHARLES E. SIMON, M. D.,
AND
ANDREW STEWART, PH. D.

Filtration of Urine.

Filtration of the urine previous to applying delicate tests where the end result depends upon the appearance of faint rings, clouds, &c., is a measure of such importance, that it is surprising most of our authors dwell so little upon it. The expedients commonly resorted to, such as shaking the urine with magnesia usta, finely divided filter paper, or even asbestos fibre, and then filtering through ordinary bibulous paper, will be found in many cases to answer the purpose, but not invariably. By this means unorganized substances and such albumin-bearing elements as epithelial cells and leucocytes may be eliminated, but there are cases, particularly in summer, where the 24-hour quantity of the urinary specimen comes to the laboratory so infested with bacteria that a distinct cloudiness, due to them, will persist. We have devised a means, which we find will filter crystal clear any urine, no matter to what its turbidity be due. We use a heavy Erlenmeyer flask, having a side neck, which we connect with a pneumatic pump. The flask is then closed with a rubber stopper, carrying a Bunsen funnel (about 2½ inches across the top) into the throat of which is placed a small perforated platinum cone. After turning on the pump, wet, thoroughly cleansed asbestos fibre is dropped into the funnel, filling it to about half its capacity. The capillary water is allowed to run through into the flask, and the fibre is pressed firmly and evenly down upon the cone. A little urine is now allowed to pass through, carrying with it all residual water, after which a test tube of about 7x1 inch dimensions is introduced into the flask. This rests to one side of the bottom of the flask, extending slantingly up, and enclosing in its neck the point of the funnel stem. The actual filtration of the urine is then proceeded with, care being taken never to let the asbestos become quite dry; i. e., there should always be a stratum of the urine remaining above it. Some care is necessary in adjusting the test tube in, and removing it from the filtering flask, but a little practice gives the necessary expertness. A. S.

Sugar in Pathological Fluids.

Experiments to the number of 110 were performed in 78 different cases, in which transudates and exudates of the great serous cavities (pleura, peritoneum, pericardium), the fluid of hydrops anasarca, skin blisters, cystic tumors, the discharge of abcesses and of joints, and, in fact, about all possible pathological human fluids were examined. The albumin of the fluids was removed previous to testing for sugar, according to Pascheles and Reichel (Wien. med. Wchnschr. 1896, No. 17). Fresh prepared Fehling's solution recommended itself for testing by reason of its certainty and the rapidity of its application. Where possible, results were controlled with the Nylander-Almén, fermentation, and phenylhydrazine tests. The urine of the above 78 patients was found sugar free, except in the case of a diabetic, in which tuberculous pleuritis had developed. In the first stages of the latter complication sugar disappeared from the urine and could not be found in the exudate; later it appeared in both. From Rotmann's work, he deduces that all serous transudates and exudates, whether of diabetics or of others, contain more or less sugar, and frequently other reducing materials of unknown constitution; on the other hand, purulent and sero-purulent discharges of non-diabetic persons contained no sugar. These results afford a (it is true, somewhat impracticable) means of diagnosticating melituria. Rotmann (F.) Untersuch-

ungen Uber den Zuckergehalt pathologischer Fliissigkeiten. Muench. med. Wchnschr., 1898, xlv, 170.

A. S.

Antiseptic Qualities of Urotropin.

A body which posesses the chemical and antiseptic characteristics of formaldehyde is split off from urotropin, after its administration, through the action of acid in the kidney or in the bladder. Caspar (Deutsch. med. Wchnschr., 1897, No. 45.) reports that, after infecting a rabbit with urotropin, that compound was found in the blood current, while it and formaldehyde were present in the urine. Whether the body above referred to is actually free formaldehyde, is questionable, as the characteristic odor is absent and it forms no precipitate with urea. The compound is, therefore, probably closely related to formaldehyde —possibly a sodium compound thereof— possessing its full antiseptic properties. Citron's investigations appear to point to the necessity of providing by diet, etc., for urine of high acidity, in cases where it is to be made antiseptic by the administration of urotropin, the above antiseptic body being produced only in the presence of acid. Citron (A.) Ueber Formaldehyd im Harn nach Urotropingebauch. Monatsb. Krankh. d. Harn— u. Sexualapp., 1898, iii, 73.

A. S.

Acid and Alkali Albumin.

The difference between the molecules of native albumins and of acid or alkali albuminates is very small and chiefly due to the mere combination of the proteid with the acid or the alkali, differing as one or the other differs, both in the proportion of constituents and in solubility. The molecule of alkali albumin has been shown to contain proportionately less sulphur and nitrogen, than the native albumin. The administration of acids, other than HCl, to dyspeptics probably increases the work of the intestinal tract, because, by forming the respective albuminates, the acid affinities of the proteids are satisfied and the secretion of HCl is not stimulated. These albuminates are not nearly so digestible as those formed by HCl, and therefore, a greater quantity of undigested proteids is passed into the duodenum. Gillespie (A. L.) Rep. Lab. Royal Coll. Phys. Edinb., 1897, 167.

A. S.

The Perinuclear Granules of Neusser.

Fisch states that in the overwhelming majority of all blood specimens examined not a trace of these bodies can be found. He believes that this fact cannot be too strongly accentuated in order to show that they are certainly something abnormal. From experiments dealing with four persons (and from other scattered observations), he is of opinion that really abundant perinuclear granule formation corresponds to an increased uric acid (ur. ac. plus x. b.) elimination. His method of experimentation differed materially from Futcher's. Fisch noted the body weight and examined 4 or 5 times the 24 hour quantity of urine. The total nitrogen was determined by the Kjeldahl, the alloxuric body nitrogen after the method of Kruger and Wulff. The quantity of uric acid nitrogen was found separately by Hopkins' method, the collected uric acid being subjected to the Kjeldahl process. (Probably a combination of the two methods is meant. Ed.) On the whole, Fisch's analyses, he believes, tend to make it justifiable to look for some connection between the presence of the perinuclear bodies and an increase of uric acid (alloxuric bodies) elimination. Further experiments will have to show if the relation is a causal one. Fisch (C) Hæmatologic remarks. St. Louis M. Gaz., 1898, i, 10.

(Our own experience has been that Neusser's perinuclear granules are found, not in a small minority, but in a vast majority of all blood specimens examined, so commonly indeed and under such various conditions that the question has naturally arisen if they have any significance whatever. We have, however, observed one striking fact. In 11 cases of malignant disease in which we studied the blood conditions—the cases including sarcoma of kidney and neck, carcinoma of uterus, stomach, rectum, esophagus, liver, etc.—no perinuclear bodies were to be found in 10. Carefully conducted control experiments excluded

all probable sources of error in technique. The diagnosis in each case has been verified by operation or the subsequent history and termination. The 11th case, in which no perinuclear granules were discoverable, was a negress (all the rest were whites). Here a clinical diagnosis of inoperable malignant disease of the uterus was made, but the patient was lost sight of and her fate is unknown. G. W. J. and A. S.)

The Counting of Blood Plaques.

In counting the blood plaques, the author employs Prus' modification of Fleming's method, the following solution being used as a diluent:

Sol. of osmic acid (1 per cent.)—10,
Sol. of chromic acid (0.1 per cent.)—10,
Glacial acetic acid—1.

In this solution the red cells are completely destroyed and a concentration of the blood mixture of 1-20 can be obtained. This insures a large number of plaques in the counting chamber, thus diminishing the error in their enumeration. The plaques are observed as round, or elliptical, opaque discs. Transversely, they appear as fine lines, and have often an oscillatory motion. The diameter generally varies from 2 to 4 microns, but is sometimes as great as 6 or 7 microns and as low as 1½. The largest are at times of the shape of a sausage and are finely granular, often showing an excentrically located refractile spot. The dilution of the blood is accomplished in the ordinary way with a pipette constructed according to the dilution required, mixing being facilitated by cooling the pipette. It is for this purpose enclosed in a test tube (through a perforated stopper) which is introduced into a freezing mixture. The pipette is withdrawn only for immediate use. The average number of blood plaques for normal persons, the author fixes a 245,000 per cmm. This number coincides with that of Cadet (in 140 persons) while 255,000 was given by Hayem and others. The number of plaques in the new born, with a few exceptions, is at first low and finally increases. Van Emden (J. E. G.) Klinische Untersuchungen über die Blutplättchen. Fortschr. d. Med., 1898, xvi, 241.

A. S.

The Influence of Acids and Alkalis on the Volume of Blood Cells.

When HCl or H_2SO_4 is added to the blood of horses it produces a swelling of red blood corpuscles which is evident even on the addition of 0.0044 per cent of HCl. This amount of HCl corresponds to but 1 3 vol. per cent CO_2, while the difference in the contained CO_2 of venous and arterial blood amounts to 4 to 5 vol. per cent. From these facts it follows that the increase of volume of red blood corpuscles by CO_2 is not due to any specific action of the gas, but is a characteristic of acids in general. In contrast to this, alkali brings about a decrease in the volume of the corpuscles, which are sensitive to the addition of 0.0067 per cent KOH. What has been said applies likewise to the white corpuscles. The augmentation in the volume of blood cells by acids is due to the fact that they take up more acid than the surrounding serum, a disturbance of osmotic equilibrium occurs which if equalized by the corpuscles further extracting water from the serum. The shrinking by alkalis is caused by a reversal of these conditions, and it is then the serum that robs the corpuscles of water. The influence of acids and alkalis on the escape of color from the reds is explained by their swelling and shrinking. Hamburger (H. J.) Ueber den Einfluss geringer Quantitäten Säure und Alkali auf das Volum der rothen und weissen Blutkörperchen. Archiv. f. Anat. u. Physiol., 1898,31.

A. S.

A Test for Bromine in the Urine.

The determination of bromine in the urine is of interest to physicians principally as a means of rapidly recognizing bromide exanthemata, and, in cases of children at the breast, whose mothers or wet nurses are taking bromides, the anamnesis furnishing no clue ; also in other cases where after the administration of potassium bromide, bromoform, etc., the rapidity of the appearance of bromine in the urine is of any particular interest. Pour 10cc of urine into a flask having a small

neck, acidulate with sulphuric acid and add potassium permanganate to permanent redness. Place in the neck of the flask a moistened strip of p. Dimethylphenylendiamin. HCl paper and warm the flask on a water bath. In the presence of even traces of bromine, a color appears on the paper, violet within and the edges blue to green and brown. This test paper is prepared as follows: Prepare a solution of p. Dimethylphenylendiamin. HCl (0.5gm in 500cc of water); dip in strips of filter paper and allow them to dry. Fluorescein paper may be similarly used (Baubigny, Chem. Ztg., 1893, 963) which turns a rose color in the presence of bromine. Jolles (A.) Eine einfache, sehr empfindliche Probe zum Nachweise von Brome im Harne. Wien. klin. Rundsch., 1898, xii, 181. A. S.

Hemoglobin and its Derivatives.

When potassium ferricyanide is added to solutions of oxyhemoglobin, or carbonic-oxide-hemoglobin, the gas combined with the hemoglobin is set free and froths off, while methemoglobin is formed. By taking advantage of this reaction, the volume of gas capable of being absorbed by the hemoglobin of blood, may be rapidly and accurately estimated without the use of the blood pump. Although methemoglobin yields no oxygen in a vacuum, it parts with it to reducing agents far more readily than oxyhemoglobin. Haldane (J.) A contribution to the chemistry of hemoglobin and its immediate derivatives. J. Physiol., 1898, xxii, 298.

A. S.

The Action of Narcotics on the Blood.

Acute alcoholic intoxication brings about a diminution of CO_2 and of alkalescence of the blood, sometimes to the extent of even 50 per cent; this is due to an augmentation of volatile fatty acids which momentarily crowd out the CO_2. The decrease of red cells does not occur regularly. In chronic alcoholism, the titratable alkalescence remains normal; the oxygen decreases as does finally the CO_2. Subcutaneous injections of ether, chloral, or morphine decrease the oxygen and the CO_2 the alkalescence remaining about normal. On inhaling ether the amount of CO_2 rises; the oxygen sinks and the alkalescence remains unchanged, and the red cells increase, at times 100 per cent., owing to a thickening of the blood through a dearth of oxygen. Chloroform appears to cause a decrease of alkalescence. In determining the alkalescence of the blood, titration (according to Löwy's method) should always be performed, because in certain cases the alkali is not present in proportion to the CO_2. Thomas. Ueber die Wirkung einige narkotischer Stoffe auf die Blutgasse, die Blutalkalescenz und die rothen Blutkörperchen. Archiv. f. Path. u. Pharmakol., 1898, xli, 118.

A. S.

The Influence of Experimental Bile Stagnation on the Glycogen of Liver and Musculature.

Rabbits stand the ligation of the ductus choledochus not so well as, for instance, dogs and cats. The contained glycogen of the liver reaches in amount by this means that set forth by other authors for hibernating animals. Glycosuria begins, and particularly in cases where dextrose has been injected subcutaneously. The glygogen of the musculature keeps pace in general with that of the liver. Subsequent to ligating the separate branches of the common bile duct, there was manifest in the icteric liver of dogs an amount of glycogen only a little less, and in one case indeed greater, than in its normal parts. Rabbits submitted to the same procedure showed but little glycosuria. v. Reusz (F.) Ueber den Einfluss experimenteller Gallenstauung auf den Glykogengehalt der Leber und der Musculature. Archiv. f. exper. Path. u. Pharmakol., 1898, xli, 19.

BIOCHEMISTRY IN RELATION TO MEDICINE AND HYGIENE.

UNDER THE CHARGE OF
E. A. DE SCHWEINITZ Ph. D., M. D.,
Director Biochemic Laboratory, B. A. I., Agricultural Department.

The Effect of Koch's New Tuberculin.

Bussenius, assisted by B. Fraenkel, has published an abstract of the observations made in treating disease by means of a new tuberculin of Koch at the Rhinological Clinic in Berlin. The observations covered a period of about three months and they treated 19 cases (11 males and 8 females). Four of these were affected with lupus and 12 with laryngeal tuberculosis; 2 with pulmonary tuberculosis complicated with asthma. The age varied from 17 to 15 years. Fifteen of these cases have been treated continuously. These 15 cases received a total of 314 injections, representing 125 cubic centimeters of the preparation, corresponding to 1,252.7 milligrams of active solid substance. The maximum of injections in a single case was 15,276 cubic centimeters. The largest single injection given was 4 cubic centimeters. The longest treatment continued for 65 days and the shortest for 29. The injections were given so as to begin with 1–500 of a milligram and increased gradually to 20 milligrams of active solid substance. In 4 cases only was it possible to follow this rule. Of the 15 cases which were submitted to treatment, 2 preserved the same weight; 7 increased in weight and 5 lost in weight about 5 kilos each. The 334 injections made have never caused an abscess formation, and the material used for the injections have always been found free from pyogenic and tubercle bacilli. In 10 of the 19 cases a slight infiltration was produced at the point of injection which disappeared of its own accord. The redness at this point did not appear larger than the palm of the hand. There was neither urticaria nor herpes.

Schultze of Bonn, thinks that years of experimentation are necessary in order to come to a correct conclusion as to whether or not the T. R. of Koch is superior to the methods of treatment ordinarily used in incipient cases of tuberculosis Koch says that it is possible to obtain good results in those cases only where the temperature is not above 38 degrees. A comparatively small number of cases have come under this head, and it would be very difficult to affirm that never at any moment of the day or night was a higher temperature than this reached. At the clinic in Bonn 9 cases have been submitted to injections of T. R. during one or two months. No aggravation of the disease was noted as was usually observed in the use of the old tuberculin. If the case was true tuberculosis complicated with laryngitis it was necessary to discontinue treatment. In another case the treatment could not be prolonged more than a month because intestinal troubles were caused, probably due to tuberculous lesions. Before the treatment, during a sojourn at the hospital of three months, the patient had gained two kilos in weight and had never shown temperature higher than 36.9 degrees. After the injections the temperature rose to 37.8 degrees, three kilos in weight were lost and the patient refused to allow the injections to be continued. In 4 other cases no change was observed. Two other cases, which were not at the hospital, improved.

Doutrelepont of Bonn, during three months treated 15 cases of lupus. The experimentor considers that the new tuberculin is superior to the old. M. De La Camp reviews observations made upon 12 cases. The T. R. produced, at the point of injection, infiltration, which disappeared slowly and rarely gave rise to abscess. Richard Müller, reports that he had never obtained any favorable results in treating tuberculosis of the ear with the old tuberculin. He had seen a case of pulmonary tuberculosis treated with T. R. without any improvement being noticed. Another case, that of a

woman, suffering from lupus and tubercular otitis, was not benefitted. Müller concludes that the new tuberculin is not suited to tuberculosis of the ear, and that from this point of view it is exactly comparable to the old tuberculin. Herzfeld, during three months, treated 9 cases for tuberculosis of the larynx giving them 145 injections. Only one of these seemed to improve under the treatment. The results by Baudach in 20 cases are somewhat more satisfactory. They appear to give good results and to accelerate the improvement of the disease. The treatment was accompanied, of course, with hygienic precautions and out-door exercise. M. J. Splengler is a confirmed convert to the Koch method of treatment. Fifty-nine cases were treated with the new tuberculin and only good results were obtained without any inconvenience. He however does not treat cases in which the temperature is over 37½ or under 37.2. He excludes cases in which the examination of the sputum does not show absence of secondary infection. This is nearly always possible in the absence of fever. When the size of the dose has been increased from 5 to 20 milligrams, they are given at intervals of from 5 to 8 days to avoid accumulation in the organism of the toxins of tuberculin.

M. Jez of Vienna has treated 6 cases with T. R. and is convinced that it does not possess any curative or immunizing properties. On the contrary the injections cause aggravation of the disease, mastitis, while râles and the number of the bacilli in the sputum increase. Some cases even with the smallest dose of 1–500 of a milligram have shown strong reaction, with fever and generally painful symptoms which have lasted from 2 to 3 days. He concludes that the remedy is very dangerous, often contaminated by numerous bacteria and should be absolutely rejected from practice. Bussenius, Schultze, Doutrelepont. Bull. méd., 1897, 785.

Desplats (Journal des science médicales de Lille p. 229) says that his experience, covering a period of more than 5 months with 25 cases, allows the conclusion that the treatment is without danger. That while in two or three cases it has not caused improvement, at the same time it has not caused any bad results. That in 15 cases undeniable improvement of lasting character has been produced, and in 12 of these this improvement was undoubtedly due to tuberculin. To judge however positively of its value a very much longer time will be necessary.

Effect of Tuberculin in Pulmonary Tuberculosis.

The author reports the results in treating a number of cases of tuberculosis at the Marien Hospital in Stuttgart since 1890-91, and comes to the following conclusions: Tuberculin is without any beneficial effect in cases of mixed infection. In cases of pure tuberculosis of the lungs, but little can be hoped for in the use of tuberculin if the disease has already progressed to a considerable extent. In a moderate progression of the disease, in many cases a decided improvement can be expected, and in the incipient stages almost invariably good results are obtained and the disease often perfectly cured. The dangers in the use of tuberculin, when the proper precautions in its administration and application are used, are very small. As a diagnostic agent tuberculin is a very useful aid. Zeitschr. f. Hyg. u. Infektionskrankh., xxvi, Pt. 2.

First Experiments with Yellow Fever Serum.

The author reports his first experiments in the treatment of yellow fever by means of antitoxic serum. The fact that persons can become acclimated to yellow fever, and that immunity is acquired after an attack of the disease, indicated the possibility of the preparation of a curative serum for yellow fever. He reports that he obtained from two horses, a serum very effective for experimental animals, one horse having been under treatment for eighteen months and the second for a year. The serum obtained from a cow which had been under treatment for about a year was feeble in action. Dr. Seidl, the director of the Saint Sabastien hospital at Rio de Janeiro, tried some of the serum from the horse that had been under treatment for eight months, upon eight cases. Five of these cases had been suffering from the disease for four days and

were in a very serious condition. Of the three others, one had had the disease for two days, and the second for three days. They all had the principal symptoms of yellow fever. Four cases were cured after treatment with the serum, and the temperature curves kept by Dr. Seidl showed that after each injection of serum there followed a marked fall of temperature. In the case in which the injection of the serum was made the second day of the disease, a single injection was found to be sufficient to reduce the temperature, and to arrest the most dangerous symptoms of the disease.

Subsequently a commission was appointed by the government for the purpose of trying the serum in the country districts. The town of San Carlos dó Pinhal, a town of about 25,000 inhabitants, situated at an elevation of 820 meters, was selected for the work. In the first series of cases treated there were two deaths and six recoveries. In the next series of experiments a young workman with very grave symptoms of the disease, temperature 39° centigrade, and pulse 104, received two injections of the serum, 20cc each time. The first was made intravenously, the second under the skin. Five minutes after, there was a general reaction, skin acquired a red color, pulse dropped to 88. Shortly after the temperature rose to 40.2° centigrade, and subsequently a third injection of 20cc of the serum was given under the skin. The next morning the temperature had dropped to 38°. Two more injections of the serum were given, which caused a very feeble rise of temperature to 38½, but the following day the temperature had decreased to 37.3°. The symptoms had generally improved, and the fifth day after his arrival at the hospital the patient had completely recovered. This new series of experments had given such satisfactory results that the work was continued upon another group of cases, numbers 9 to 22. All of these cases reached hospital in a very grave condition. Ten of these cases recovered manifestly under the influence of the serum treatment. Upon some of them the treatment in large doses of serum produced such a rapid change in the character of the disease that undoubted evidence was presented to us of the beneficial effect of the serum. Of the remaining cases that died, one objected very seriously to the serum treatment, and the others were in such condition on account of other disease that the treatment could not be satisfactorily practiced. In a total, therefore, of twenty-two cases, there were six deaths. The prophylactic properties of the serum were also tried in the prison of San Carlos do Pinhal. The first victim to the fever was one condemned to capital punishment, who occupied a cell with some others, in which the hygienic conditions were exceedingly bad. The following day the sentinel who was in continual communication with the condemned in this cell, died A few days after, another of the criminals died and finally a fourth, which showed the place to be a new centre of infection. Two soldiers recently arrived from Europe, and who were in continual communication with this infected quarter, offered themselves of their own accord, to the injection of the serum. The effect of the prophylactic properties of the serum was to prevent any further deaths from yellow fever either among the prisoners or their keepers. The government de l'Etat de Saint Paul as a result of this work, has decided upon the erection in the capital, of an institution for the production of serum for the cure of yellow fever. Sanarelli (J.) Premiére expériences sur l'emploi du sérum curatif et préventif de la fièvre jaune. Ann. de l'Inst. Pasteur, 1898, xii, No. 5.

The Treatment of Tuberculous Guinea Pigs with Original Tuberculin.

On account of the interest in the Koch TR the author reports some results obtained in treating tuberculous guinea pigs with the original tuberculin. He has worked under the direction of Geheimrath Koch and his conclusions are, that both TR and the original tuberculin are useful reagents on experimental animals. Spengler (C.) Ueber die Behandlung tuberculöser Meerschweinchen mit Originaltuberculin. Zeitschr. f. Hyg. u. Infektionskrankh., xxvi, Pt. 2.

Therapeutic Notes.

Coca Erythroxylon.

The Provincial Medical Journal of London, England, says in a recent issue, there is no need to enter into a full description of the history of the Erythroxylon Coca, as we believe that most medical men are fully acquainted with the principal facts concerning the plant. We may, however, recall to mind that the leaf is the only part of the plant used. Very much depends, therefore, upon the plucking of the leaf, and the time at which it is plucked; the subsequent care of the leaf being matter of considerable importance, and affecting very materially the preparations made from it. M. Mariani was the first in Europe who took up the study of the plant, and over 30 years ago commenced manufacturing for the medical profession the various specialties associated with his name, viz., "Vin Mariani," "Elixir Mariani," "Pâte Mariani," "Thé Mariani," "Pastilles Mariani," etc., preparations which are known all over the world, and which have acquired their well-known reputation by their purity and efficacy. The stimulating and strengthening property of the leaf in its natural state has been tested by experienced travelers and botanists during several centuries, and it is this invigorating property which the physician wishes to bring into use, and which he is enabled to do in a palatable form by means of "Vin Mariani," this wine being indicated where there is great depression, long continued exhaustion, and where a special stimulative action is desired. "Vin Mariani" is agreeable, palatable, imparting by its diffusibility an agreeable warmth over the whole body, and exciting functional activity of the cerebro-spinal nerve centers. We have frequently prescribed this wine, and we can, from practical experience, recommend it.

A New Apparatus.

Dr. C. H. Richardson of Albany in the Medical Record, June 11, 1898, describes a new apparatus for sterilizing dressings by formaldehyde, with bacteriological provings. The apparatus which Dr. Richardson employed is furnished by the H. K. Mulford Co., of Philadelphia and Chicago. It is especially adapted for apartment disinfection but is also suitable for field work. Clinically the process leaves nothing to be desired. No disagreeable symptoms have been observed, although the method has been employed for months.

Summer Months.

The unique value of Gray's Glycerine Tonic Comp. is becoming widely appreciated especially for use during the summer months. It corrects the prevailing stomachic derangements, controls fermentation and acidity, aids digestion and stimulates hepatic and intestinal functions. In respiratory disorders, nerve exhaustion, anæmia, chronic ailments and debilitated conditions it can be relied on, and no over stimulation or depressing reaction follows its use.

Count Okuma's Wooden Leg.

The North American Medical Review says that the Japanese minister to the United States was instructed weeks ago to obtain the best artificial limb in the country for Count Okuma and he turned the order over to the Secretary of the Legation, who instructed Consul General Ucheida to consummate the negotiations. The latter gave an order to the firm of A. A. Marks. The count is to get the leg in about a month. A. A. Marks is not only the oldest firm of importance in America, but for many years their workmanship has been sought from Europe, Asia and Africa.

A Reliable Preparation.

Dr. R. G. Stanwood of Newark says he has used both quinia and strychnia in combination with the Syr. McArthur, with the happiest effect. He desires to give thanks for the pains taken to give the profession a pure and reliable preperation of these valuable remedies, free from manufactured testimony and quackish advertising.

A Cure for Dyspepsia.

Warm weather is coming, and with it will come the nervous depression that forms an inseparable part of this time of the year. Horsford's Acid Phosphate is not a food; yet it will remove any sense of depression that follows a hearty meal. As a general tonic to the nervous system, as a cure for dyspepsia, and as a most refreshing and pleasant drink we certainly recommend this well-known remedy.

True Americanism.

The National Druggist says that physicians and pharmacists, like the masses of the people, have tired of arrogation of superiority implied by the announcements of foreign manufacture, and are revolting against them. The Antikamnia Chemical Company of St. Louis, in all of its advertising matter whether through the journals or by circular, takes particular pains to impress upon physicians and pharmacists that its goods are made in America, by Americans, and for American use.

Faulty Metabolism.

Dr. W. A. Walker in the Journal of Practical Medicine declares that diastase transforms many times its own bulk of starch into soluble maltose. One of the most convenient ways of prescribing diastase is in the form of the diastatic malt extract Maltzyme. On account of its limpidity and palatability it is taken without objection by children and invalids. Certainly, in actual practice, the results are sufficiently satisfactory to warrant its use in nearly every case of amylaceous indigestion, and in cases of malnutrition.

A Useful Chart.

Write to the Imperial Granum Food Company, New Haven, Conn., for sample copies of their new "Nursing World Fever Chart" for recording the vital signs, and other information relating to the baths given in the treatment of fever cases. It is very complete and will be found especially useful in typhoid fever.

Syphilis.

In a lecture on venereal diseases, Prof. T. F. Glenn, M. D., Vanderbilt University, says when a patient presents himself for treatment, he should be placed upon the following recipe until the symptoms disappear, his appetite is improved, and a general feeling of vigor and activity exists: two grains of bichloride of mercury in six ounces of Iodia, one teaspoonful to be given after each meal. Besides five grains of iodide of potassium and three grains of phosphate of iron to the drachm, Iodia contains stillingia, helonia, saxifraga and menispermum.

Prevention of Uterine Diseases.

Gonorrhœal infection is now generally considered one of the most important causes in the development of disease of the female genital organs. For this reason the treatment of the primary vaginitiis in as thorough a manner as possible becomes of paramount importance. According to many practitioners, copious irrigation of the vagina with hot water and the use of Micajah's Medicated Uterine Wafers is the most efficient, agreeable and convenient method.

Hay Fever.

The season of rose cold and hay fever is with us. These conditions have in the past been a source of much distress to the patient and have exhausted the resources of the physician. The introtroduction of Firnol Comp., however, has placed in our hands an absolute specific for affections of this character as well as for all chronic inflammations of the naso-pharynx.

Cystitis, Prostatitis, and Irritable Bladder.

R. T. Hocker, M. D., Ex. Pres. So. Western Ky., Med. Assoc. writes that he has been using Sanmetto in his practice for two or three years. He has used it in a good many cases of cystitis, prostatitis, and in all cases of irritable bladder, with the most gratifying results.

TRANSACTIONS OF THE MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA.

EDITING COMMITTEE:

W. W. JOHNSTON, M. D., GEO. M. KOBER, M. D., JAS. D. MORGAN, M. D.

MEETING OF FEBRUARY 23, 1898. Dr. S. C. Busey, President, in the Chair.

REPORT OF THE COMMITTEE ON PUBLIC HEALTH OF THE MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA ON THE WATER SUPPLY AND SEWAGE DISPOSAL IN THE DISTRICT OF COLUMBIA, AND THE DISCUSSION THEREON.

HISTORY OF THE EFFORTS TO SECURE A BETTER WATER SUPPLY FOR THIS CITY.

BY SAMUEL C. BUSEY, M. D.,
President of the Medical Society of the District of Columbia.

As early as 1890, in a "Contribution to the etiology of typhoid fever," Dr. George M. Kober cited the notable fact that following the epidemic at Cumberland, Md., the first case of which occurred December 10, 1889, the number of deaths from the disease in this city from December, 1889, to April 30, 1890, was 74, nearly double the number during the corresponding months of the previous year. "This may," adds Dr. Kober, "have been a coincidence, but it may also confirm the conclusions of the English river pollution commission, that nothing short of abandonment of the inexpressibly nasty habit of mixing human excrement with our drinking water can confer upon us immunity from the propagation of epidemics through the medium of potable water."

But to Dr. G. Lloyd Magruder must be awarded the merit of initiating an investigation which placed this society in the front in efforts to secure a better water supply for this city. In a lecture delivered before the Sanitary League February 5, 1894, Surg. Charles Smart, U. S. A., emphasized the great prevalence and high death rate of typhoid fever in this city, and attributed it to pollution of the Potomac water supply. These statements Dr. Magruder, who was in the audience, promptly challenged. In a subsequent publication in the Evening Star, Dr. John S. Billings and Prof. Clifford Richardson, the District chemist, disputed the accuracy of Dr. Smart's statement referring to the pollution of the Potomac water supply. While subsequent investiga-

gations have not verified Dr. Smart's statement that the high percentage of typhoid fever in this city was due mainly to the distribution of germs of the disease through the Potomac water, they point to the conclusion that it is one of the sources of infection, and that one which offers the greatest danger.

Dr. Magruder did not drop the subject at this point, but at the meeting of this society February 7 following called attention to the statements that had been made, and upon his motion a committee composed of himself and Drs. W. W. Johnston and C. M. Hammett was appointed to investigate the causes of the prevalence and high death rate of typhoid fever in the District of Columbia.

This committee based its investigation upon the following inquiries :

1. The prevalence and mortality of typhoid fever in the District.

2. The relation of the dissemination of the disease to the—

(*a*) Public water supply.

(*b*) To the pollution of the soil with leakage from privies, from defective sewers, and from backing up of sewage from tidal movements.

(*c*) To the drinking of well or pump water.

(*d*) To contaminated milk and to other causes.

3. The difference in mortality in different areas of the city, with a view to discover the causes of the disease.

4. Conclusions, based upon the foregoing data, as to what measures should be taken to diminish the spread of the disease.

The committee prosecuted their investigations with remarkable energy and diligence. On June 6, 1894, their report accompanied with numerous maps, charts, and diagrams illustrating its context, was submitted to the society with the following recommendations, which after consideration were unanimously adopted.

1. The immediate abandonment of all wells within the city limits, exception only to be made in case of the absence of the Potomac supply, and where the wells, after repeated chemical and bacteriological examinations have been found to be free from all possible sources of danger ; but even these to be abandoned as rapidly as possible.

2. Purification of the sewerage system already existing by replacing as rapidly as possible all damaged or defective drains.

3. The introduction of new sewers in advance of other improvements in parts of the city not now supplied with drainage, and the extension of the system as far outside of the city limits as the rapidly growing population demands, so as to prevent soil contamination.

4. The adoption of some system by which the lower sections of the city can be more completely drained and the risks arising from the backing up of tide water and sewage prevented.

5. The final and safe disposal of the sewage.

6. To make all existing privies, vaults, or other receptacles of human excreta water tight, and by rigid inspection and penalties to prevent the danger from leakage and overflow.

7. The early completion of the plans recommended by Colonel Elliot, in charge of the Washington Aqueduct, and now in course of execution, which have in view the sedimentation of the Potomac water, and ultimately the completion of works for filtration, the only proper method of purification.

8. The suppression of all privies and the enforcing of the law to make sewer connections.

9. Careful inspection of all dairies in the District from which our milk supply is drawn, and the enactment of a law by which no milk shall be sold in the District without a permit from the health office. The inspection should cover an examination at the dairies of all possible sources of infection, including the water supply.

10. The urging upon the members of the profession of a careful collation of all facts bearing upon mode of infection in each case, and the advantage of report-

ing such facts to the society, and the propagation of the doctrine that immediate disinfection of the stools is the first duty of the physician as guardian of the health of the community.

G. L. MAGRUDER,
W. W. JOHNSTON,
C. M. HAMMETT,
Committee.

These recommendations comprehend the wide scope of the inquiries and show conclusively the thoroughness and completeness of the committee's investigations. Subsequent investigations have reaffirmed their conclusions and so extended the field of research along the line indicated by Surg. Charles Smart as to emphasize the necessity of sedimentation and filtration of the drinking water supply.

Immediately after the adoption of this report the society, through Commissioner Truesdell, received an invitation from the Committee of the House of Representatives on the District of Columbia, and on June 14, through its committee, composed of Drs. S. C. Busey, W. W. Johnston, G. L. Magruder, C. H. A. Kleinschmidt, G. Wythe Cook, S. S. Adams, and D. W. Prentiss, presented the report to the committee of the House, which, after two hearings, reports of which were published in the local press, ordered it to be printed as a public document. Four thousand copies were printed and widely distributed throughout the country.

It is believed this is the first and only instance of a medical society appearing by invitation before a committee of Congress, and of the publication by Congress of a report of its investigation into the sanitary condition of a city. The bill then pending, known as the bond bill, to provide means to complete the water supply and sewage disposal systems, passed the House of Representatives, but failed in the Senate..

On October 24, 1894, Dr. John S. Billings, who had recently returned from a visit abroad, read by request, before the society, a paper entitled "Filtration methods of water supply and sewage disposal in some large European cities," in which the distinct statement is made that "the securing of an abundant and pure water supply appears to be the most urgent need of Washington at the present time," and adds, "Sedimentation alone will not give us satisfactory results, and rapid filtration through steel cylinders, with or without the addition of alum or other chemicals, while quite as costly as the simple sand filtration, does not give an equal guaranty of the purity of the water." This paper was published in full in the Evening Star of October 25, and attracted widespread attention, because it set forth from actual observation and study the superiority of sand filtration over other methods.

In December 1894, the president of this society was appointed chairman of the committee on public health of the Washington Board of Trade, and continued at the head of that committee until the appointment of Gen. George M. Sternberg, in December, 1897. At a public meeting of the Board of Trade, held January 22, 1895, specially set apart for that purpose, the chairman of the committee on public health, in an address, set forth the results of the investigation of the committee of the Medical Society, and urged the importance of active and cooperative effort of the Board of Trade to secure such legislation as would protect the community from prevalence and high death rate of typhoid fever. Several other public meetings, one in the banquet hall of the Shoreham, one in the parlor of the Washington Club, and another at the Builder's Exchange, were held during

the month of February, 1895, under the auspices of the Board of Trade, which were addressed by the chairman and Dr. W. W. Johnston in the hope that such impetus might be given to public sentiment as might secure the necessary legislation. In the report of the committee on public health of the Board of Trade, bearing date November 11, 1895, attention is called to the investigations made by this society in 1894.

In this report the committee emphasize the importance of the extension of the system of sewerage and completion and purification of the water supply, including the abolition of pumps and wells, and establishment of a proper system of sedimentation and filtration. In the reports of 1896 and 1897 the committee renew these recommendations to the board of trade, which have been three times unanimously approved by said board.

By invitation Prof. W. P. Mason, of Troy, N. Y., delivered, January 30, 1895, an address before this society on the subject of water supply of cities, in which he set forth the necessity of sedimentation and filtration, and demonstrated the superiority of sand filtration over all other known methods.

Prof. Mason has made a special study of the water supply of cities, and is the author of a text book on the subject, which is generally accepted as the highest authority in this country on that subject.

In 1895 the Commissioners of the District of Columbia appointed Dr. George M. Kober special medical sanitary inspector, who submitted November 27, 1895, the result of his "investigation of 500 cases of typhoid fever, selected at random from those occurring in the District between July 1, 1895, and October 31, 1895, inclusive. [See Report of Health Officer 1895.]

In October, 1895, in compliance with the request of United States Attorney Birney, Drs. Busey, Kober, and Woodward appeared before the grand jury of the District of Columbia to testify in regard to the causes and prevalence of typhoid fever in this District. In its report to Judge Cole, in criminal court No. 1, submitted December 18, 1895 (Evening Star, December 18, 1895), the grand jury makes the following recommendations:

That a system of sedimendation and filtration in connection with the water supply is primarily necessary.

That the water supply is entirely inadequate and should be increased.

That, as opportunity offers, all pumps and wells used for drinking purposes should be closed.

That the use of box privies be discontinued by law.

That all improved premises abutting on public sewers and water mains, should be connected with such sewers and water mains, and their occupancy, unless so connected, be prohibited by law.

That legislation relative to a more thorough inspection of milk is absolutely essential.

That we earnestly hope and recommend there may be such immediate legislation as will improve the sanitary conditions along the Potomac and Eastern Branch, looking to the reclamation of the marshes in that section and the disposal of the polluted matter forced upon them under the present sewerage system.

At the moment, the river should be dredged from the mouth of every large sewer to the river channel.

We further recommend that a law be executed compelling all physicians to report to the health department every case of zymotic disease coming to their knowledge.

We make this report in the hope that it will stimulate action on the part of the authorities charged with such a vital question as the public health, as well as to remind the General Government of its responsibility in the premises.

In the report of the committee on public health of this society, submitted January 26, 1896 (See Public Health Report, March 6, 1896), the conclusions and recommendations of the committee of 1894 are reaffirmed. The committee asserts that "the agitation of the subject of the purification of the Potomac water is forced upon us, as physicians, by every recent addition to our knowledge of the subject," and adds that sand filtration is the "most convenient and effective method for the purification of drinking water," and "must be adopted ultimately for the water supply of Washington."

At the same meeting the president submitted the following propositions, which were unanimously adopted:

Whereas, the city of Washington, being the capital of the United States, should be placed and kept in the best sanitary condition; and

Whereas such condition can only be secured by having every habitation or habitable house connected with an ample supply of pure drinking water and with a system of foul-water and sewage disposal which will promptly remove such fluids beyond the city limits in such manner as to absolutely prevent soil pollution: Therefore,

Be it resolved, First. That the general system of water supply from the Potomac River should be extended so as to be available for the supply of every habitable building now in the city or which may be erected within the city limits, and that this provision should be extended as far as possible to the immediately adjacent suburban districts.

Second. That the general water supply should be purified by sedimentation and filtration (the first being necessary at certain times and the second at all times), before it is admitted to the mains.

Third. That the system of sewerage which has been adopted should be extended, pari passu, with the system of general water supply until every habitable house can be readily connected with it.

Fourth. With the completion and purification of the conduit system of water supply all springs, pumps, and wells should be closed by such means and methods as will prove so effective that no human being can obtain drinking water from either of these sources.

Fifth. As rapidly as possible, pari passu with the extension of the conduit system of water supply and system of sewerage, the owners of every habitable and inhabited house should be compelled to make satisfactory connections with such systems of water supply and sewerage, and all privy boxes, cesspools, and other methods of disposal of human excreta be effectively abolished.

Sixth. Without adequate supply of pure water for all domestic purposes and sewer connections of habitable or inhabited houses, pollution of soil, foods, and drinks, and the diseases due to such pollution, cannot be prevented.

At a public meeting of the Board of Trade, February 25, 1896, at which the report of its committee on public health was considered, the foregoing propositions, submitted by the chairman of its committee, were adopted, with the following additional recommendations:

Whereas the numerous and constantly increasing area of marsh along the eastern border of the city is a constant menace to the health of the residents of the eastern section of the city, and especially as to the inmates of the almshouse and hospital, St. Elizabeth's Asylum, and army and naval forces, officials and employees at the marine barracks and navy-yard: Therefore,

Be it resolved, That the reclamation of these marshes is imperatively demanded and should be accomplished without unnecessary delay.

During the same year, 1896, this society, through its committee on legislation, had a hearing before a subcommittee having charge of the appropriation bill for the District of Columbia, at which the necessity of speedy completion of the system of sewage disposal and extension and purification of the water supply were fully discussed.

On January 15, 1897, the Civic Center of the city of Washington adopted the following preambles and resolutions:

Whereas the statistics of the health officer of the District of Columbia indicate an almost uniform increase and excessive prevalence of typhoid fever during the past fifteen years; and

Whereas the experience of the civilized world points to a contaminated water supply as the most important factor in the causation of this disease: Therefore, be it

Resolved, That we, the Civic Center of the city of Washington, a body composed of members who are working for the public good, most earnestly pray the Senate and House of Representatives in Congress assembled that you will create a commission * * * for the purpose of determining the present sources of contamination of the Potomac River and the measures necessary to remedy, remove, and prevent such pollution, if found to exist.

At a recent discussion, November, 1897 (See Evening Star, November 20 1897), of the pollution and sources of contamination of the Potomac water supply before the National Geographic Society by Dr. E. K. Sprague, of the Marine-Hospital Service, and Prof. A. P. Davis, hydrographer of the United States Geological Survey, the conclusion was set forth that properly constructed filter beds were the only practical means of purifying the public water supply.

More recently, at public meetings of the Board of Trade, held January 20, and February 4, 1898, to consider the reports of committees on public health and water supply, the agitation of the subject was renewed and the opinion expressed that completion of the systems of water supply and purification and sewerage disposal were imperatively demanded by every consideration of public sanitation.

In the letter of the Acting Secretary of War, in response (Senate Doc. No. 94, second session Fifty-fifth Congress) to resolutions of the Senate of January 10, 1898, the reports from the Surgeon-General of the Army and of Capt. D. D. Gaillard, Corps of Engineers, "relative to the filtration of the water supply of the District of Columbia," General Sternberg sums up the result of his investigation in the statement as follows:

So far as I am able to judge at present, the most reliable and practicable method of obtaining the object in view would be the construction of filter beds similar to those in use for purifying the water supply of London, Hamburg, and other European cities, and at Lawrence, Mass., in this country.

And Captain Gaillard in the third of his conclusions, says:

The drainage area of the river above the Great Falls is so large, and lies in so many different States, that it is believed that it will be utterly impracticable either to pass or to enforce such laws as will entirely protect the Potomac from pollution, and when the citizens of the District demand a water supply from suspicion it must be secured by filtration.

The foregoing résumé of the history of this agitation sets forth the active efforts of this society to complete the sanitation of this city. Every investigation has led to the same conclusions. The Board of Commissioners has added the force of official indorsement and approval of its recommendations and in various ways sought to secure necessary legislation; the Board of Trade has added the weight of popular judgment and indorsement, and recently the local press, more especially the Evening Star, has contributed the influence of their editorial columns to the promotion of legislation as would secure an adequate supply of unpolluted drinking water. All these efforts have proven futile, and the city remains today the prey of a single preventable disease, which has cost its citizens, in loss of life and actual out-

lay in the past ten years, more than would have been required to complete the systems of water extension and purification and sewage disposal.

PRELIMINARY REPORT OF THE COMMITTEE ON PUBLIC HEALTH.

Mr. President, Ladies and Gentlemen:

It is perhaps well known to you that, according to the statistics of 1890, Washington enjoyed the unenviable distinction of being seventh in a list of 54 American cities in regard to the annual number of deaths from typhoid fever. You are all doubtless aware that it is the opinion of many that the character of our water supply has something to do with this large mortality. It may not be without profit, therefore, to consider, in a manner best suited to a public meeting of this character, the relation between these two things—typhoid fever and water supply—with special reference to the conditions that obtain in our own municipality.

1. What is the nature of typhoid fever; how is it contracted; what is its infective principle; can the disease be transmitted by means of the water of brooks, streams, and rivers?

Typhoid fever is a specific disease, accompanied by certain characteristic tissue alterations within the body, and by certain almost equally characteristic signs and symptoms, an affection which usually lasts for a prescribed time and has a mortality of about 1 in 10.

It is caused by a specific micro-organism. This micro-organism—the bacillus of Eberth—is present in the dejecta of patients suffering from this disease. If such dejecta be thrown into closets, they find their way through sewers into streams or rivers; or if cast upon the ground or into defective privies or drains, the earth becomes contaminated, and, with the washing of rains and the melting of snow and ice, springs and water courses become polluted.

It is true that it is rare that the specific micro-organism of typhoid fever can be found in water in which we have every reason to infer its presence. But it is equally true that in such water we find other micro-organisms of a harmful nature, and not infrequently the bacillus coli communis, which is by some supposed to be an embryo or latent form of the bacillus of typhoid fever.

Aside from the results of bacteriological examination, however, have we any direct evidence to show that water contaminated by the excreta of typhoid fever patients is dangerous and is likely to produce the same disease in him who drinks it?

To the neighborhood of Plymouth, Pa., in the winter of 1884-85, there came a man suffering from typhoid fever. His dejecta, without being disinfected, were thrown upon the snow-covered banks of a stream. When spring came and the snow melted some of the people in Plymouth, farther down the stream, ceased using the water they had been drinking all winter and drew their supply from this stream. There were 8,000 inhabitants in Plymouth at this time. Among those who used the water from this brook there were 1,000 cases of typhoid fever and 100 deaths. Among those who procured their water elsewhere there was no typhoid fever at all.

In 1894, near Windsor, Vt., a girl had typhoid fever. The evacuations, without treatment, were thrown into a privy vault situated upon a hillside. With the beginning of the spring thaw, the snow about the vault, which had one defective side, melted and the water went to swell a brook flowing at the foot of the hill. Many of the people in Windsor, a town of 2,000 inhabitants, got their

water from this source. Among these there were 120 cases of typhoid fever and 13 deaths, while in families that obtained water from other sources there was no illness.

Near Basel, in Switzerland, there was an isolated case of typhoid fever in a farmhouse. A brook running by received the dejecta. This brook supplied the water for drinking and household purposes to everyone living in the hamlet of Lausen except six families. No member of these six families had typhoid, while 17 per cent of the remainder of the inhabitants contracted the disease.

These three instances show that one case may infect a whole community, and two of them make plain the fact that cold does not diminish the activity and virulence of the germ of this disease.

We could cite, we regret to say, the histories of numberless epidemics—the Tees epidemic in 1890, the Schenectady-Mohawk epidemic in 1890-91, the recent epidemic at Maidstone, and that from which Philadelphia is now suffering—all of which go to prove beyond peradventure of a doubt that the specific infective principle of typhoid enters into and is carried by the public water supply to the doomed community, and that the size of that supply and the consequent degree of dilution of the poison makes no essential difference in the results.

2. This point having been established, the next to be considered is whether improvement in the quality of drinking water furnished a community has been followed by any diminution in typhoid fever.

Happily, testimony upon this point is abundant and unanimous. During the year ending September 30, 1892, when the intake supplying Chicago with water was only a few hundred feet from the shore of Lake Michigan, there were 1,790 deaths from typhoid fever. During the next year, after the driving of the 4-mile tunnel, there were but 712. The progressive improvement in the water supply of Boston has been followed by a reduction in the mortality from this affection from 17.4 in 1846-1849 to 3.2 in 1890-1892 per 10,000 inhabitants. In Lawrence, Mass., the mortality from typhoid fever has been reduced to 40 per cent of what it formerly was, and it is said that at least one-half of the cases going to make up this 40 per cent result from the use of unfiltered water.

In other cities where the quality of water furnished the people has been improved there has been a no less striking diminution in the deaths from this disease. Permit us to quote from a recent article by Lieut. Col. Charles Smart, deputy surgeon-general, U. S. A., dealing with this topic :

London has had filtered water for sixty years. I have before me its typhoid fever death rates for the years 1869 to 1894, taken from the reports in the library of the Surgeon-General's office. The mean annual rate for the last ten years was 14.4 ; the extremes 10.2 and 16.9. And the rates for the whole of England and Wales, although larger than those of London, show that much care is given to the purity of water supplies. The mean annual rate for the last decade on my list is 17.6 with the extremes 13.7 and 22.9. I have the Berlin rates from 1854. Before this city began to pay attention to the purity of its supply, the rates ran from 60 to 100. The highest rate was 143, in 1872. Since a systematically filtered water was introduced the highest rate was 18.4 in 1889 ; the rate in 1894 was 4 per 100,000. I have the Vienna rates from 1867. The highest rate was 181.8, in 1871. A pure water was obtained in 1874, and the rate fell immediately. During the past ten years it has been less than 10 annually. In 1894 the rate of Hamburg was 6 ; of Rotterdam, 4.8. In Warsaw, where purification was effected in 1887, the typhoid rate was 60 to 105 annually

during the period 1879-1886, and 18 to 30 subsequently. I could give columns of such statistics, all showing that the deaths from typhoid fever are lessened in proportion to the care taken in providing a pure water supply.

Surely these facts are enough to abundantly prove that with a purer water comes a diminution in the number of deaths from typhoid. It is always the same thing, always the same result, to whatever quarter of the globe we turn.

3. What has been the nature of the plans that have been undertaken to secure a pure water supply for cities?

It is possible to improve the water supply of towns and cities, either by procuring water from a more healthful source, or, where this is not feasible, of purifying the supply already furnished. The last is accomplished by filtration. The results of this method of purification upon the health of a community have already been mentioned; the means by which they are brought about, and the changes wrought in an impure water subjected to this process, must be next alluded to.

The filtration of water upon a scale sufficiently great to meet the demands of a large municipality is effected either by the agency of filter beds or by mechanical filtration.

A filter bed, to quote Mason's description—

is a tight reservoir, suitably underdrained, and containing some 6 feet of stratified filtering material of progressive degrees of fineness, beginning at the bottom with 6 inches of broken stone and ending with an upper layer of fine sand.

One acre is said to be the area that each filter bed should occupy, and the bed may be open, or, in locations where the winters are severe, covered. To complete the plant, a sedimentation basin is required where the water to be filtered is especially turbid, and a reservoir to hold at least twenty-four hours' supply of the filtrate.

The water is permitted to flow upon the top of these filters to a depth of about 4 feet; the process of filtration is constant, and the capacity is about two and one half million gallons per acre per day, although without injuring the structure of the filter or the character of the filtrate this amount may be materially increased.

To clean a filter bed it is necessary to pare off a very thin portion of the upper sand layer, which is washed and subsequently replaced.

The cost of construction of a filter bed of this description varies in different countries according to the price of land, material, and labor, and the frequency with which it has to be cleaned is an important item as regards the cost of maintenance. The character of the water to be purified and the season of the year determine this latter factor.

It is said the Continental filter beds cost on the average for construction $45,000 per acre if open, and $68,000 if covered. Two uncovered beds in Poughkeepsie were built at an expense of $112,641 per acre, including the price of the land. A filter at Ilion, N. Y., cost $101,900 per acre. In Poughkeepsie the cost of maintenance is $2.94 per million gallons.

The construction of the filter beds at Lawrence is upon a slightly different plan, the flow of water through the filter being intermittent, the bed being drained once in twenty-four hours. They are 2½ acres in extent, have a capacity of 5,000,000 gallons daily, and cost $67,000 for construction.

The natural supposition would be, from the frequent repetition of the word "filter" and from the construction of these beds, that their efficiency depended solely upon their power to strain the

water passing through them, and thus separate out and retain bacterial organisms, allowing only pure water to flow through. But whatever its mechanical effect, the utility of a filter depends upon quite another mode of action. Certain harmless bacteria attach themselves to the materials of the bed and destroy whatever organic matter the water to be purified contains. This organic matter furnishes the micro organisms capable of causing disease with food, and after their food supply is cut off, the filter and the effluent water become untenable for them and they die.

How effective sand filtration of this character is in removing bacteria from drinking water is shown by the fact that in Hudson, N. Y., 92.76 per cent of the micro-organisms in the water to be purified are eliminated by filtration; in London, 97.6 per cent; in Altona, 99.69 per cent; and, according to Koch, a filter should deliver less than 100 germs per cubic centimeter, irrespective of the number in the unfiltered water. At Lawrence millions of typhoid germs, along with the food material necessary for their sustenance, were applied upon a filter of the usual construction and used for experimental purposes; 99.95 per cent of these bacilli were eliminated, and what is more striking still is that on account of the destruction of their food supply those that passed through the filter soon perished in the effluent pipes.

In mechanical filtration, from one-fourth to one-half of a grain of common alum per gallon is added to the water to be filtered, and it is then admitted under pressure into a cylinder of wood or boiler iron. "The carbonates present in the water decompose the alum with the formation of a white flocculent precipitate of aluminum hydrate." This substance entangles all suspended material, organic and inorganic, and deposits it on sand, whence it is washed out by a reversed current of filtered water. This method is very useful in the clearing up of turbid waters, and is said to have reduced the bacteria from 45,000 to 90 per cubic centimeter. The cost of a plant of this description will be referred to later. Other methods of filtration need not be spoken of in this report.

4. What has been the condition of our public health in regard to typhoid fever?

Table I, which accompanies this report, shows that in the seventeen years from 1881 to 1897, inclusive, there have been in this city 2,539 deaths from typhoid fever, the yearly average being 149.35, the greatest number occurring in 1895 (221) and the smallest in 1881 (67). The average annual ratio of deaths from typhoid fever to 1,000 deaths from all causes is 28.05, the highest being in 1895 (37.9), the lowest in 1884 (16). The average ratio of deaths from typhoid fever to each 10,000 population during these seventeen years is 6.29, the highest being in 1890 and 1891 (8.3 in each year) and the lowest in 1881 (3.6). In 1896 there were 133 and in 1897 there were 132 deaths from this disease.*

Deaths recorded at the Health Office as being due to malarial fever and typhomalarial fever are not included in the above table. In the two years 1896 and 1897, taken together, there were 265 deaths from typhoid fever. In the same period there were said to have been 100 deaths from malarial and typhomalarial evers. There was, consequently, 1 death from the latter to every 2.65 deaths from typhoid fever. In the Johns Hopkins Hospital, where the type of malarial cases admitted is far more likely to be severe than those encountered here, and

*Whenever 1896 or 1897 are mentioned in this report, the calendar year is meant; in every other instance it is the fiscal year that is spoken of.

where, through examinations of the blood, etc., errors in diagnosis are reduced to a minimum, there have been but 3 deaths from malaria in more than seven years, or one death from malarial fever to every 16 from typhoid. And it should be noted that although there have been 285 cases of malarial fever within the past six months at the Army and Navy posts in and about this city, there have been no deaths from this cause.

It is the opinion of this committee that at least a very large proportion of the deaths in this city attributed to malarial and typhomalarial fevers are in reality due to typhoid, and in this opinion the committee is in accord with all those who have made any careful study of these diseases as they are met with in this locality. If this opinion be correct, then the total deaths from typhoid fever in this city for the past seventeen years, instead of being as recorded, 2,539, must, in reality, be far in excess of any such figure. For, in the thirteen years from 1881 to 1893 there were said to have been on the average 100 deaths annually from malarial and typhomalarial fevers combined, and although, as has been seen, this has fallen off in 1896 and 1897 to 50 deaths a year, still an increase for the seventeen years of only 50 deaths a year would bring the typhoid death rate up to 3,389.

What has just been said in regard to malarial and typhomalarial fevers applies, though to a less extent, to the mortality from diarrheal diseases in persons over 10 years of age. In 1896 and 1897, taken together, there were 74 deaths in adults from this cause, some of which at least, were in all probability deaths from typhoid fever.

In order to ascertain the distribution of the fatal cases of typhoid fever within the city limits, the committee of 1894 divided the city into certain sections: (1) South, comprising that part of Washington south of East Capitol street and the public grounds; (2) northeast, east of North Capitol street and north of East Capitol street; (3) central, north of public grounds and between North Capitol street and Thirteenth street northwest; (4) northwest, north of public grounds and between Thirteenth street northwest and Rock Creek; and (5) Georgetown.

It will be observed by reference to Tables II and III that, according to the report submitted in 1894, the highest mortality from typhoid was in section 1, 2, and 5 (south, northeast, and Georgetown), and the lowest in section 4 (the northwest).

During the two years 1896 and 1897, the records of which we have investigated, section 2 (northeast) leads the list, with sections 5, 1, 3, and 4 (Georgetown, south, central, and northwest) following in the order named.

Since the report of 1894 was presented there has been practically no change in the northeast, a slight betterment in the central and northwest sections, a slightly more marked improvement in Georgetown, and the greatest change of all for the better in the south.

Map I shows the distribution of the typhoid mortality for 1896 and 1897. Table IV shows the variation in mortality in each section from the average for the whole city.

In conclusion it may be said that during the last two years there has been a slight decrease in the number of deaths from typhoid fever in Washington; that the number of fatal cases is largest in the northeast and smallest in the northwest, and that since the report of 1894 the greatest improvement has taken place in the southern section of the city.

5. What is the nature of our water supply? Can any connection be traced

between our drinking water and the existence of typhoid fever?

From the carefully prepared maps in the report of 1894, it is apparent that typhoid fever was most common in those sections of the city where surface wells and box privies were most generally in use. Since that time a large number of wells and privies have been closed or removed, and there has been a diminution in typhoid mortality. It is very probable that here we have an instance of cause and effect; the coincidence is certainly striking.

But it is equally apparent that we cannot hold wells and privies wholly responsible for our high mortality. The northwestern section relies less than any other portion of the city upon water obtained from wells. Of all the houses in this section 59.45 per cent. are supplied with Potomac water, and yet its death rate from this disease is only 0.2 per 10,000 less than the southern section, where only 24.32 per cent. of houses derive their water from this source.

Furthermore, Dr. George M. Kober, in his most admirable report (1895) showed that "of 436 cases of typhoid contracted in the city in the summer and fall of 1895, 132 were largely consumers of Potomac water," and of the 44 cases so far reported to the present committee as having occurred in Washington within the past six months, 24 were in the habit of using Potomac water exclusively.

Elaborate studies have been made of the sources and character of the Potomac water supply, to which your committee earnestly desires to call the attention of those in any way interested in this subject. To describe them at length would require more time than your committee can claim, but a few points should be strongly emphasized.

From the very comprehensive report of the Surgeon-General of the United States Army (January 24, 1898), it is easy to see that the Potomac River above the intake is a vast sewer for the reception of all sorts of industrial waste and the offal and sewage of comparatively large communities.

Fortunately, the distance of the chief sources of pollution and the character of the river flow favors dilution, oxidation, and sedimentation, and diminishes to some extent the dangers of local disease. But that these dangers are only diminished and not by any means eliminated is proven very clearly by the increase in our tyhoid fever rate in 1889, shortly following an epidemic of this disease in Cumberland.

To prove conclusively the unwholesomeness of the Potomac supply it is not necessary to show that it is contaminated at its origin or along its course. Permit us to quote from the report of the Surgeon-General just referred to:

P. A. Surg. E. K. Sprague, of the United States Marine-Hospital Service, in a lecture before the National Geographic Society in this city on November 19, 1897, stated that examinations of the Potomac water taken from the city mains, made at the hygienic laboratory of the Marine-Hospital Service since July, 1897, show a variation of from 33 to 4,600 bacteria per cubic centimeter, and that since August 1, 1897, intestinal bacteria had been found in every sample but one.

7. Is it not reasonable to presume that if filtration were adopted for this city there would be a marked diminution in typhoid fever.

We think, from what has gone before, that this question can be at once answered in the affirmative. Wherever a filtration plant has been established the typhoid mortality has fallen. There are, moreover, certain squares in this city which are practically exempt from

this disease, and the reason, in the opinion of your committee, is that every householder takes precautions to purify or sterilize the Potomac water furnished him or uses no Potomac water at all. If the imperfect individual methods pursued can bring about such a desirable end, why should not a satisfactory system of general purification be adopted that would confer a like immunity upon all our people. Competent engineers have repeatedly shown that it could be done; this society has urged action in every conceivable way; yet every year more and more valuable lives are purposely sacrificed.

The only possible objection that can be urged against the installation of a general filtration plant for this city is its cost. It is true that the figures are large, the outlay considerable, and it is maintained that it will not pay. It may be well, therefore, in concluding this report, to investigate this question a little more nearly.

Captain Symons estimated that the cost of a mechanical filtration plant for this city would be $600,000 or less, with an additional annual charge for maintenance, etc., of $18,000. This provided for a service of 40,000,000 gallons per day, or 160 gallons per day per capita for a city of 250,000, or 133 gallons per day per capita for a city of 300,000 inhabitants.

In a more recent estimate based upon a proposed service of 60,000,000 with arrangements for increase if necessary to 100,000,000 gallons per day, Captain Gaillard expresses the opinion that an adequate filtration plant would require the expenditure of $1,164,900, with an additional annual cost for maintenance and interest charges of $141,912. A mechanical fitration plant capable of the same service would cost $810.000 and expense of operation, maintenance, etc., $140,379 additional annually. This estimate does not include the cost of the land, since it is probable the Government now owns sufficient for the purpose.

Now, this is the price of filtration. Disregarding all doubtful cases of malarial and typhomalarial fevers and diarrheal diseases and also other affections liable to be brought about by the use of impure water, and confining ourselves strictly to typhoid fever, let us see what that alone costs us.

To determine the economic value of an individual or the average cost of illness might seem a difficult matter, but it has been gone over so often by our ablest statisticians that the figures upon which our subsequent estimates are based may be considered fairly accurate. Certainly, as will be seen, it is impossible to regard them as exaggerated.

Excluding all deaths except those from typhoid fever, we find that in the past seventeen years 2,539 persons have died in Washington fromthis cause alone, or an average of 149.35 per year. Since there is usually but one death from typhoid fever out of every 10 persons affected, we have therefore, in seventeen years 25,390 cases, an average of 1,493.5 per year.

Following the well recognized methods of computation in dealing with matters of this kind, we arrive at the following as being the amount in money that typhoid fever has cost this community:

149.35 deaths per year, the value of a human life being set down as $2,000	$298,700.00
149.35 funerals, at an average cost of $25 each	3,733.75
1,344.15 recoveries; loss in wages during illness and convalescence, an average period of 43 days, at $1 per day	57,798.45
1,344.15 convalescents; cost of physician's attendance, nursing, medicines, and general cost of illness, at an average of $25 for each case	33,603.75

Annual cost of typhoid fever in Washington for the past seventeen years	393,835.95
Cost of typhoid fever in Washington for the whole of the past seventeen years	6,695,211.15
Cost of filtration plant, highest estimate	1,164,900.00
Cost of maintenance and interest charges for the past seventeen years	2,412,504.00
First cost of filter and maintenance for seventeen years	3,577,404.00

It is therefore apparent that with even this ridiculously low estimate of the value of human life and the cost of illness, the annual loss in money to this city through typhoid fever alone is equal to one-third of the first cost of the most expensive form of filtration plant, a filter-bed system capable of supplying every inhabitant with an abundance of pure and healthful water; and it is further manifest that in the past seventeen years we have paid a sum equivalent to twice the cost of installation and maintenance (for a like period) of such a system. There can, therefore, be no further question as to whether a filtration plant for Washington would pay.

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T. A. Claytor, M. D.
H. B. Deale, M. D.
R. T. Holden, M. D.
R. Norton, M. D.
W. C. Woodward, M. D., *ex-officio.*
G. W. Johnston, M. D., *Chairman.*

Table I.

Years.	Population.	Deaths from typhoid fever.	Ratio of deaths from typhoid fever to 1,000 deaths from all causes.	Ratio of deaths from typhoid fever to each 10,000 population.	Total deaths.
1881	183,000	67	16.2	3.6	4,136
1882	188,653	120	26.2	6.3	4,571
1883	191,980	92	21.4	4.8	4,286
1884	200,000	76	16	3.8	4,814
1885	200,000	124	25	6.2	4,998
1886	205,000	125	27.2	6.2	4,674
1887	210,000	116	25	5.5	4,685
1888	225,000	168	33.6	7.4	5,040
1889	250,000	170	33.3	6.8	5,152
1890	250,000	208	37.7	8.3	5,564
1891	250,000	208	36.6	8.3	5,720
1892	260,000	183	30.4	7	6,098
1893	263,000	186	28.8	7.1	6,452
1894	265,000	210	34.7	7.9	6,039
1895	268,000	221	37.9	8.2	5,565
1896 (calendar year)	274,160	133	22.8	4.85	5,832
1897 (calendar year)	276,963	132	24.06	4.76	5,486

Table II.

Region.	Population of region (police census, 1890.)	Total deaths from typhoid fever in two years (1896 and 1897) in each region.	Annual ratio of mortality to 10,000 population in each region
1. South	62,218	48	3.8
2. Northeast	26,278	30	5.7
3. Central	70,865	51	3.6
4. Northwest	49,969	32	3.2
5. Georgetown	16,344	15	4.2

TABLE III.

Region.	Population of region (police census, 1892).	Report of 1894.		Report of 1898.		Decrease in annual rate of mortality to 10,000 population in each region.
		Total deaths from typhoid fever for five years in each region.	Annual rate of mortality to 10,000 population in each region.	Total deaths from typhoid fever in two years (1896 and 1897), in each region.	Annual rate of mortality to 10,000 population in each region.	
1. South	62,218	197	6.3	48	3.8	2.6
2. Northeast	26,278	84	6.2	30	5.7	0.5
3. Central	70,865	179	5.0	51	3.6	1.4
4. Northwest	49,969	114	4.6	32	3.2	1.4
5. Georgetown	16,344	52	6.3	15	4.2	2.1

TABLE IV.

Region.	Annual rate of mortality to 10,000 population in each region for period of five years (report of 1894).	Annual rate of mortality to 10,000 population in each region for period of two years, 1896 and 1897 (report of 1898).	Variation above and below mortality for whole District in each region.	
			Report of 1894.	Report of 1898.
1. South	6.3	3.8	+0.1	−1.0
2. Northeast	6.2	5.7	0.0	+0.9
3. Central	5.0	3.6	−1.2	−1.2
4. Northwest	4.6	3.2	−1.6	−1.6
5. Georgetown	6.3	4.2	+0.1	−0.6

DISCUSSION.

DR. GEORGE M. KOBER. MR. CHAIRMAN: We are often confronted with the statement that medical men are trying to prove too much in the causations of typhoid fever in this city.

Our opponents say that if we want to condemn the pumps we adduce evidence of the very impure condition of the well water; in advocating the extension of the sewer system we point to the mischief done by box privies; if we wish to secure pure-food legislation we refer to infected milk as a factor, and if we want filtration of the Potomac water we point out the sources of pollution and their effects upon the undue prevalence of the disease.

But when we consider that the air we breathe, the water we drink, and the food we eat are of vital importance to our welfare, and that the germs of typhoid fever may be spread through all these media, it becomes simply a question which of the factors—well water, box privies, milk, or Potomac water—should receive the greatest prominence.

SOIL POLLUTION AND WELL WATER.

While my official inquiry in the fall of 1895 showed that 12.4 per cent. of the 500 cases investigated contracted the disease at summer resorts, and that a number of cases were spread through infected milk and other channels, such as house infection, nursing, etc., the undue prevalence of the disease in the suburbs and certain sections of the city was clearly due to infected water and a defective sewer system, particularly the former.

The absence of sewers compels recourse in about 13,000 houses to box privies and makeshifts by which the soil and ground water are liable to pollution with infected dejecta. Leaky and defective sewers and abandoned box privies and vaults have produced the same result, and since the outlets of some of the

largest sewers of the southern parts of the city are below tide-water level, the backing up of sewage can not fail to result in soil and water pollution.

These conclusions are strongly supported by the fact that Dr. Kinyoun demonstrated the presence of intestinal bacteria in 28 out of 81 samples of well water and 10 of spring water submitted to him. Moreover, since 1880, 335 public wells have been abandoned because the water, after repeated chemical analyses, was found to be dangerous to health.

Under these circumstances it is not surprising that consumers of well water contribute a very large percentage of typhoid fever cases.

DEEP WELLS AND IMPURE WATER.

Since 1895, with the hope of securing a purer water supply, twenty deep wells have been driven in different sections of the city.

In the opinion of scientists the geological formation of this basin is such as to preclude the possibility of securing water free from surface contamination. Two of these wells, one 247 feet deep, have since been abandoned as dangerous to health. An analysis of the water showed it to be little less than diluted sewage. This, I believe, vindicates all that has ever been said about soil and water pollution, and furnishes the best argument for the immediate abandonment of every well in the city, provided, of course, the lesser evil of the two, viz, Potomac water can be substituted.

METHODS FOR THE DISPOSAL OF HUMAN EXCRETA.

It is a noteworthy fact that during my investigation the houses provided with box privies and other makeshifts furnished 1 typhoid-infected house for every 49, while the sewered houses furnished 1 in every 150.

Dr. Smart, in a recent lecture at the Army Medical School, also called attention to the report of the health officer of Nottingham, England, showing that there was 1 typhoid-infected house in every 37 supplied with privy pits; 1 in every 120 supplied with earth closets and pails; and only 1 in every 558 sewered houses.

These figures furnish a satisfactory argument for the abandonment of box privies, for even if there were no wells they would still be a source of danger in so far as during the summer and fall months they favor the transmission of germs by means of flies infecting the food and drink of the home and neighboring houses. Nor can the possibility be ignored that the germs from leaky and overflowing boxes reach the upper layer of the soil and with pulverized dust may gain access to the system.

MILK INFECTION.

The fact that over 138 epidemics of typhoid fever have been traced by Dr. Busey and the writer to infected milk justifies all that has ever been urged in favor of a strict control of the milk traffic.

These measures have been repeatedly emphasized and given precedence in our recommendations, because they are most easily enforced and with the least possible expense to the public.

THE RELATION BETWEEN POTOMAC WATER AND THE PREVALENCE OF TYPHOID FEVER IN WASHINGTON.

While I consider the prompt abandonment of every public and private well and box privy as extremely necessary, because it wou'd eliminate two important factors in the dissemination of the disease, I fear the main danger will not be removed until we secure a pure general water supply.

My reason for this belief is that if the wells and box privies were the chief and only factors there should have been a decrease in our typhoid fever rate in proportion to the number of pumps abandoned and the number of miles of sewers constructed.

(*To be continued.*)

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THE

NATIONAL MEDICAL REVIEW.

VOL. VIII. WASHINGTON, D. C., AUGUST, 1898. No. 3.

Original Articles.

UNITED STATES SURGEONS AS PIONEERS IN ABDOMINAL AND PELVIC SURGERY.*

BY A. H. CORDIER, M. D.,
KANSAS CITY, MO.

In selecting a topic for an address for this occasion it occurred to me that a paper briefly reviewing the advances in abdominal and pelvic surgery, made by United States surgeons, would be appropriate. I feel my inability to do this subject and the illustrious surgeons justice, as the mere recalling of historical truths and words of high praise fall far short of paying the debt of gratitude which the profession and humanity in general owe to these great benefactors for their pioneer work. This debt is indeed great, and can be paid only in installments by those who follow in their footsteps for all time to come. That the surgeons of the United States have advanced this special branch of surgery far more than any other (or every other) nation of the world, no one, who is willing to be convinced, will doubt, after reviewing the operative technique and history of the surgical procedures within the sphere of the abdomen and pelvis.

This life-saving and pain-relieving and comfort-giving army of faithful pioneer workers and investigators, it must be recalled, have, within a few years of our nation's childhood, wrought changes and established surgical procedures far superior to and more numerous than any for centuries prior to their time. Much of this work of advancing abdominal and pelvic surgery has been done by surgeons not surrounded by wise and suggesting seniors, not backed by unlimited capital, not sustained by early professional or lay influence, not within easy reach or in command of inexhaustible clinical material, but depending upon their own heartfelt desire to relieve the suffering of an appealing patient, they have devised ingenious means and applied them skillfully, with most gratifying and lasting results.

It is a remarkable fact, that with very few exceptions the operation, as perfected by the originator of the procedure, has not been improved upon, except in so far as the modern aseptic technique is concerned. It is true that the application or extension of an operation may have been advanced, but, as a rule, the brand of the original will be seen indelibly stamped

*An address delivered in St. Louis before the Tri-State Medical Society.

beneath the trade mark of some more recent surgeon who has seen fit to accept the old, but has appropriated it to the aggrandizement of himself. by naming the operation after its father by adoption. This, however, I am pleased to say, is very rarely the case, and but few instances can be found.

While the wonderful work of the pioneers in abdominal and pelvic surgery is the theme of this short address, it must not be forgotten that many of the major and minor surgical procedures have been advised and first performed by United States surgeons. The name of Brasher, of Kentucky, will ever be remembered as the name of the first to perform a hip-joint amputation. Mott and a host of other general surgeons will ever be associated with pioneer surgical work.

As in all other pursuits, the pathway of the surgical pioneer has not been strewn with American beauties, and other sweet-scented flowers. Progress has always met with many stumbling blocks, but thanks to these conscientious and daring surgeons who heeded not the jeers of the less progressive, or the threats of the ignorant, but put into execution their well-framed ideas and demonstrated the correctness of their then advanced views.

On December 9 (or 13), 1809, the first ovariotomy was performed by a young and bold Virginian, at that time living in Danville, Ky. This great work, inaugurated by McDowell on that date, has saved more lives and relieved more suffering women than all other surgical procedures combined. The outgrowth of his work has been the extension of surgery to organs in the abdominal and pelvic cavities, and remarkable as it may seem, this invasion of other abdominal organs by the surgeon has been made principally by the surgeons of the United States.

The work of the abdominal surgeon today is accepted as being the height of surgical perfection. Someone has said of McDowell: "He cut away the abdominal barriers, and the surgeons walked in and reaped the harvest of this daring surgical venture."

Dr. Washington L. Atlee, one of the pioneer disciples of McDowell, wrote as late as 1875: "It is well known that from the earliest period of ovariotomy in Philadelphia, down to the present time, it has been my invariable custom to invite members of the profession to witness the operations, in order that they might be able to form a proper opinion of its character, and to judge of its propriety. Many positively refused and emphatically condemned the innovation, while others took the invitation as an insult." Very few of the one hundred and ten thousand physicians in the United States today would interpose a single objection to being present and endorsing this surgical procedure for the relief of an otherwise fatal malady. Dr. Washington L. Atlee, after reading the reports of McDowell's successes, decided to follow in his footsteps, and during his life performed many successful ovariotomies, and thus forged another link in the golden chain spanning the time from McDowell's work to the work of the modern operators. To Dr. Atlee as a pioneer belongs the praise for establishing ovariotomy as a justifiable procedure. His work in reviving ovariotomy makes him deserving of the highest place.

Dr. Nathan Smith, a native of Massachusetts, in 1821, was the second person to perform ovariotomy, and he did it without a knowledge of Dr. McDowell's operations.

A boldness characterized the work of some of the early pioneers never since surpassed. In 1759 John Bard, of New York, operated for extra-uterine pregnancy, this being the first case operated upon. William Baynham, of Virginia, followed him in 1791, making the second recorded case of ectopic pregnancy operated. This operation fell into disrepute for many years, save in the hands of a few surgeons. The pathology is at this time so thoroughly understood, and the surgical technique so familiar, that it is universally recognized as the only safe way of bringing these cases to a favorable termination. Electro-puncture and injection of poisonous drugs have long since been dropped in the management of these cases. To witness the post mortem of an extra-uterine pregnancy after rupture will be all sufficient to convert the most skeptical that the only safe method of dealing with such cases is the procedure first performed by John Bard.

Robert Battey, of Georgia, was the first to remove normal ovaries "with a view to establish at once the change of life, for the effectual remedy of certain otherwise incurable maladies." This is an operation of undoubted benefit in a special class of selected cases.

J. Marion Sims, a native of South Carolina, after thirteen repeated trials and failures, succeeded in closing a vesico-vaginal fistula, and thereby established an operation for the cure of this most annoying and disagreeable condition. The technique as first practiced by Sims has not been improved upon, and is the operation as practiced today with such gratifying results. Sims long anticipated the intestinal work of today by advocating the immediate opening of the abdomen, and the repair of an injury to the bowel from gunshot or stabbed wounds. The suggestion of Sims was first put into execution by a native of our country, Dr. W. T. Bull. (Dr. Kinlock, of North Carolina, it is claimed, performed the first operation known as coeliotomy for gunshot perforation, in 1863. His patient died.) Dr. Bull's case (1885) is one of the most remarkable laparotomies for gunshot injury to the intestine. Seven intestinal openings were found and closed. His patient recovered.

This very remarkable case was followed, a year or two later, by a very similar one in the practice of the same surgeon. The work of our fellow (Missouri) statesman must not be lost sight of along the line of perforative injuries to the bowel.

Drs. Dawson and Bernays have reported a series of almost phenomenal successes following reparative work in gunshot and stabbed injuries to the hollow viscera of the abdominal cavity. That United States surgeons have contributed the greater part toward the work of advancing this special class of immediate life-saving work is beyond all question.

We have pioneers today who are members of the Tri-State Medical Society, in the prime of life, actively engaged in practice, whose work, as performed today will be handed down to posterity along with the work of McDowell, Sims, and others of as great renown.

The surgery of the pancreas has its early history in the work of United States surgeons, and to Senn, of Chicago, most of the credit is due for our present pathological and surgical knowledge of this heretofore obscure organ. Wolcott, of Milwaukee, was the first to remove the kidney (for malignant disease) and is, therefore, entitled to be enumerated as one of the history-making surgeons of

the United States. Hemorrhage of the kidney, from gunshot and other injuries, is fatal in a large majority of cases, if not treated surgically. This fact being recognized by Keen, he decided to remove the next kidney presented to him injured, if the bleeding was of a dangerous character, and uncontrolled otherwise. Keen's first operation was in 1887, the hemorrhage being due to a gunshot wound.

The technique of abdominal hysterectomy has been made, by our surgeons, as nearly perfect as any operation in surgery. Burnham, in 1853, after making a correct diagnosis, performed the first deliberately planned hysterectomy. Dr. Mary A. Dixon Jones (1887) made an improvement in the technique of this operation by treating the pedicle extraperitoneally. The work of Eastman has been an influential factor in perfecting the operation of total extirpation, and many operators are using his method altogether.

Kelly, of Baltimore, by his writings and works has done more than anyone to popularize and perfect the technique of hysterorrhaphy, an operation designed to remain in the sphere of legitimate surgical procedures, regardless of the objections raised by a few obstetricians that it results in obstructing labor, and is conducive of miscarriages.

A decade ago the surgery of the intestines was so disastrous that it seemed almost folly to attempt an operation for intestinal obstruction or other pathological conditions requiring a resection or anastomosis. Senn, with the introduction of his decalcified bone plates, so simplified the technique that it gave an impetus to intestinal surgery that has resulted in the saving of thousands. The use of hydrogen gas for the detection of gunshot and other perforative intestinal injuries, was also first used by Senn. While this method is rarely, if ever, resorted to at this time, its use was the direct route to more exact diagnostic methods, and with the operative indications so plain before the surgeons, a more perfect method of dealing with these cases led to the necessity of devising the technique of today.

The ingenious button of Murphy's invention is so safe and so easily applied that its adoption by the novice, as well as the expert, has brought by far the lowest mortality, and the most nearly permanent good results, of any method of intestinal repair.

The work of Weir, Bull, McBurney, Morris, and Morton, names familiar to us all, will ever remain as pathfinders in the pathology and surgery of the appendix.

Dr. Weller Van Hook, of Chicago, was the first surgeon to operate for a perforating typhoid ulcer, since which time the operation has been successfully performed a number of times in this, as well as other countries. Dr. J. C. Wilson, of Philadelphia, early recommended this operation, and McMurtry, of Louisville, and Morton, of Philadelphia, were among the first to successfully perform it.

Ureteral catheterization, while first practiced by Pawlick, has been simplified and brought into general use mostly through the work of Dr. Howard Kelly, of Baltimore.

The surgical technique of the pelvic viscera, in the presence of universal adhesions in pyosalpinx and ovarian abscesses, as taught and practiced by Joseph Price, is as nearly perfect as any procedure in the whole domain of surgery. His following today, in the United States, is the largest of any surgeon in this country.

By their great work these surgical pathfinders have cleared away the stumbling block and made the way smooth, for those who follow in their footsteps.

The National Medical Review,

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The Military Surgeon,

A Supplement,

UNDER THE CHARGE OF

Colonel William H. Forwood, Assistant Surgeon-General U. S. Army.

Office: 1437 L Street, N. W.

WASHINGTON, D. C., AUGUST, 1898.

Notices and Reviews.

CONSERVATIVE GYNECOLOGY AND ELECTRO-THERAPEUTICS. By G. Betton Massey, M. D. F. A. Davis Company, Philadelphia. 1898.

In the preface to this third edition the author says it was found desirable to rewrite and restate so many of the facts connected with the application of electricity to the diseases of women, in order to adequately represent the very latest advances in this subject, that an entirely new book has been the result, dealing more fully than heretofore with the nature and causation of the diseases of women in which electricity is urged as a rational remedy, as well as discussing in full detail the many minor points which are essential to success in its employment. As is well known, the author is an enthusiast on electro-therapeutics, and he has brought all his enthusiasm with him in the preparation of this book. Earnestness is no great fault—on the contrary it is the persistent advocate who many times accomplishes more than genius. The true value of electro-therapeutics is yet to be learned, and every work like that of Dr. Massey's is one more step towards learning the part that electricity is destined to play in the care of disease. The second part of the volume, on the rudiments of electricity, will prove of special interest to every physician whether or not he intends to make a special study of electro-therapeutics. The illustrations add much to the value of the book.

THE TRANSACTIONS OF THE MEDICAL SOCIETY OF THE STATE OF CALIFORNIA. 1898.

The twenty-eighth annual session of the California Medical Society was held at Fresno, April, 1898, under the presidency of Dr. Cephas L. Bard. The meeting was largely attended, and this volume of transactions is filled with creditable work. The address of the president is to be especially commended as a departure from the beaten track of journal compilations to the broad field of general literature. The reports of the committee on chemical medicine, and the committee on medical and surgical disease of children are good enough as far as they go, but sadly lack completeness. The two papers on congenital dislocations of the hip joint are excellent productions. There are many other good things in this volume which are well worth reading.

Progress of Medicine.

GENERAL MEDICINE AND SURGERY.

Diagnosis and Treatment of Neurasthenia.

After a description of the various forms of neurasthenia which he divides into two classes—the hereditary and acquired—the author adverts to the difficulties encountered in the diagnosis of this disease from hysteria and progressive paralysis of the insane in its early stages. The therapy of neurasthenia aims in the first place at relieving the psychic depression from which the patient suffers. For this purpose the cold douche, in the form of the broken jet on the trunk and the full jet on the lower limbs, is recommended as the best tonic. Static electricity, in the form of the bath without sparks, also finds favor in the hands of the author as a factor in relieving the mental depression. The electric bath should be given every second day, not oftener, as it otherwise is likely to act as an excitant. For the pain and headache of neurasthenia nothing is so valuable as the bromides, but care should be taken not to saturate the patient with them. If the insomnia is marked, chloral and sulfonal may be used, but hypnotics should be employed with great discretion. Especial attention should be paid to diet. The author deprecates the idea, entertained by so many, that neurasthenia is a disease of the alimentary or any other system, and asserts that if any gastric disturbance exists, as it usually does, it is a part of and not the disease itself. A good rule for the diet is the old maxim, "Eat little and often." It is not always wise to attempt to formulate a diet based on the nature of the gastric contents, but rather one which experience has proven to be the best. Small amounts of liquid food are recommended. Milk is generally badly tolerated. Prolonged or violent exercise is proscribed, but gentle exercise, gradually increased, is a powerful adjuvant to treatment. In the case of acquired neurasthenia it is essential, as the disease is a psychic one, to remove the patient as far as may be from the causes which have brought about the condition. This can be accomplished by sending the patient away from his usual occupations and business worries, to some foreign country where manners and customs are different. With hereditary neurasthenics success will be less often obtained, owing to the small reserve of nervous energy with which they are endowed. Still temporary improvement may be brought about. Diagnostic et traitement des états neurasthéniques. Semaine méd., 1898, xviii, 121.

Metabolism in Bright's Disease Under the Influence of Thyroid Extract.

The authors endeavored to ascertain the following: 1. Whether the increase in nitrogen elimination, usual in health after feeding with thyroid extract, occurs in Bright's disease. 2. Whether thyroid extract influences the excretion of albumin. 3. Whether the relation of serum albumin to serum globulin is influenced thereby. The experiments were carried out on three males who were placed in nitrogenous equilibrium and then given from 4 to 18 thyroid tablets daily. In the first case, a boy 15 years of age, the thyroid extract showed no decided influence, which is explained by the age of the individual, thyroid extract having no effect upon young people. In the second case the nitrogen elimination was increased, that of albumin decreased. The relation of the albumins remained normal. The third case exhibited the same result as the second. The thyroid extract acted as a diuretic in the last two cases. The authors believe that the increased nitrogen elimination and the diminished albumin elimination are to be explained by the destruction of plasma albumin in the blood. Dieballa (G.) and Illyés (G. V.) Stoffwechsel Untersuchungen an Brightekern unter Schilddrüseneinwirkung. Arch. f. experiment. Pathol., xxxix, 273.

Miliary Tuberculosis of the Stomach.

In a child dead of tubercular meningitis, the mucous membrane of the stomach

was found strongly injected without, however, showing any gross lesion. Nevertheless microscopical examination disclosed the presence of miliary tuberculosis of that organ. Deep in the mucosa were found small necrotic foci richly infiltrated with leucocytes and tubercle bacilli. The infection of the stomach was evidently through the blood. Miliary tuberculosis of the stomach is occasionally met with and is easily overlooked microscopically, owing to the rapid postmortem changes that occur in the stomach. Wilms (M.) Miliärtuberkulose des Magens. Centralbl. f. allg. Path. u. patholog. Anatom., 1897, Oct. 15th.

The Cure of Anemia by Altitude.

The author calls attention to the increase in the number of red blood corpuscles observed in passing from sea level to high altitudes. He reaches the following conclusions: The air of the mountains, like that of the seashore, by improving nutrition aids in the formation of hemoglobin; but more than that, by virtue of a mechanism as yet incompletely explained, altitude itself determines a rapid formation of red blood cells. The increase in red cells does not continue in healthy individua's on their return to sea level, for they lose in a few weeks the exaggerated increase acquired in the mountains. Among anemic individuals the gain is more lasting; but even in cases where it is but temporary, it acts as a formative stimulant of the hematopoietic organs, a matter of very evident value. Lépine (R.) La cure de l'anemie par l'altitude. Semaine méd., xviii, 105.

Hyperchlorhydria as the Result of the Excessive Ingestion of Alkalis.--Hayem.

The author declares that hyperchlorhydria of the severest type may be produced by the ingestion of large amounts of alkalis, especially bicarbonate of soda and Vichy salts. Since physicians have learned to know the frequency with which hyperchlorhydria occurs, the result has been that there are a number of individuals who have, in consequence, become "alkali eaters," since patients of this class. to relieve their distress, habitually take some form of alkaline treatment for relief of their symptoms. The result of such treatment is. in Hayem's opinion, an increase in the pathological condition and aggravation of the hyperchlorhydria. The alkali seems to increase the acidity through absorption rather than through topical action. He states that, in order to produce hyperchlorhydria by alkalis, it is necessary for the mucous membrane to contain numerous peptic glands. Among persons whose mucous membrane is degenerated and hypopepsia exists, the alkalis lead to apepsia. In general the author believes that whatever the primary chemical condition may be, whether hypo- or hyperpepsia, alkalis increase the primary chemical type. Hayem. Bull. et mém. d. l. Soc. Méd. des Hôp , 1898, xv, 323.

The Present Status of Treatment of Diabetes Mellitus.--Leo.

The author reports some recent researches which are of importance in the pathogenesis of diabetes mellitus. Dogs, which are given a solution of grape sugar, fermented by yeast, pass urine containing sugar for several days. If the solution be given for a long time, the animals become emaciated. This shows that the frequent excretion of sugar in man after drinking bier is due to some poisonous metabolic product of the yeast cells. It is well, therefore, to deny all bier to diabetics. The chief endeavor in the treatment of diabetes is to reduce the amount of carbohydrates ingested and to facilitate the oxidation of sugar in the body. At first the diet should consist of nothiug but proteids and fats with such drinks and condiments as contain no sugar. After 3 to 5 weeks, starchy material may be added gradually, watching the urine carefully to determine how the starchy food is being utilized: the amount of starchy food is regulated by the results of urinary examination. In severe cases, patients should be restricted to a rigid flesh and fat diet two or three times a year. An important factor in the treatment is muscular exercise which aids the assimilation of sugar. In cases where the individual is weak, massage is indicated. There is no remedy yet discovered which influences the sugar excretion. Leo, (H.) Muench. med. Wchnschr., 1898, xlv, Apr. 19.

CLINICAL DIAGNOSIS.

UNDER THE CHARGE OF

CHARLES E. SIMON, M. D.,

AND

ANDREW STEWART, PH. D.

Effect of Thyroid Extract on the Blood.

Blood examinations were made in nine cases. In one the red blood corpuscles were increased 728,400; the leucocytes, 1,330, and the hemoglobin, 7 per cent. These were patients suffering from some form of mental depression. Thyroid medication was instituted, which was followed in five of these cases by a marked change for the better. In three of these lost weight increased during treatment; in two, subsequently. Psychic benefit was observed from the first. Bell (S.) American Med. Ass., (Rev. in) Phil. Med. Jour. 1898, i, 1182.

A. S.

Clinical Estimation of the Proteids of Breast Milk.

Two "milk burettes" each containing 5c c of milk are subjected to a temperature of 95°-100° F. for 18-24 hrs.; the burettes are then cooled in water and the milk serum withdrawn into (15cc) graduated tubes and a solution of picric and citric acids (Esbach's Sol.) added to mark, the mixture being stirred with a glass rod and rotated in the hand centrifuge. The amount of centrifuging requisite stands in direct ratio to the care observed in separating the fat. Centrifuge to lowest reading and read off percentage of proteids. Woodward (Geo.) A clinical method for the estimation of breast milk proteids. Phil. M. J., 1898, i, 956.

A. S.

A Test for Seminal Fluid.

Soak stain in water and mount a drop of the extract on a microscopic slide. Upon allowing a drop of saturated iodine (in KI) solution to flow under the cover slip, brownish, rhomboidal crystals often crossed, characteristic of seminal fluid, will appear. Stains several years old still react to the test. Lecco (M. T.) Wiener klin. Wschenschr., 1897, x, 37.

A. S.

A Source of Error in Urine Analysis. A Peculiar Specimen of Sputum.

A urine giving a positive reaction with Fehling's Solution failed to react to the fermentation test and other control tests for the detection of glucose. It was discovered that the reduction was caused by carbolic acid finding its way into the urine from utero-vaginal douching. A fresh specimen of rusty-brown sputum from a pneumonia patient showed under the microscope some red blood corpuscles, and on staining was found to be loaded with uncapsulated diplococci. A day later the color changed to bread-crust brown, very few red corpuscles could be found, but a number of crystals and clumps of haematoidin, or bilirubin appeared. Two days later the sputum presented a grass green appearance; the coloring matter being due to biliverdin, as a result of the decomposition of blood-coloring matter, and not icterus, an abscess within the lung, or the action of bacteria. Walker (Thad.). Harper Hospital Bul., Detroit, 1898, ix, 4.

A. S.

The Relation of Albumose to Fever.

In three cases of interstitial hepatitis there was no apparent relation to be traced; the same was true of nine cases of malignant tumor, seven of which were carcinoma of the gastro-intestinal tract. In two of these nine cases, however, albumose appeared in the urine during brief periods of fever. Albumose was present in gastric ulcer (no fever) just subsequent to hemorrhage, and in scorbutus and gout with fever. The observation of fifty cases of other diseases showed albumose present in the urine of thirty-eight, with fever—absent in that of twelve, without fever. A review of the author's experience and of the literature on this subject goes to prove a well-

established relation existing between albumosuria and fever. With lesions of the gastric and intestinal mucosa hydrolized proteids may well escape direct from the gastro-intestinal tract into the blood current, and thence into the urine. Schultess (E). Deutsch. Arch. f. klin. Med., 1898, lx, 53.

A. S.

Melancholia.

Some of the peculiarities of the blood of melancholia are brought out by the author's work on a material offered by fifty-seven cases, as follows: Highest hemoglobin estimation, 135 per cent (Gowers), or 120 per cent (Fleischl); lowest 90 per cent (G.), or 75 per cent. (F.). The highest number of red blood cells to the cmm. was 8,760,000; the lowest 4,320,000. The lowest hemoglbn. was in a case where the melancholia was incident to a chronic interstitial nephritis, and should, therefore, not be regarded as at all characteristic of melancholia. The lowest number of red cells was in a case of mild melancholia, of a very chronic character, which had remained about the same for nearly two years, and was then nearly recovered. The writer states it as a circumstance worthy of note, that concentrated blood is generally symptomatic of melancholia, and that he has never seen any real signs of the disease in the profoundly anemic. The rational treatment, after taking a careful inventory of the patient's condition, supplemented by an examination of the blood and urine, is to promote elimination by every possible avenue, and then to feed the patient such a variety and quantity of food as the examinations already alluded to indicate; lastly, to give such medicines as will assure proper sleep and initiate and encourage elimination. Loveland (B. C.). A contribution to the study of melancholia &c., N. Y. M. J., 1898, lxvii, 881.

A. S.

The Smegma Bacillus.

While most smegma bacilli are more readily decolorized than tubercle bacilli by any of the solutions commonly employed, occasionally they possess equal, or even greater resistance than the latter. Methods of decolorization where acids are employed alone are especially misleading; acid alcohol or dilute alcohols, unless allowed to act long, are equally unreliable Better, but not free from error, is the use of absolute alcohol for at least five minutes, though in ammoniacal urine, such prolonged action may also remove the stain from the tubercle bacilli. Attempts to remove the fat or fatty acids from the bacilli by ether, chloroform or other solvents fail to furnish a means of differentiation. We must rely on means of excluding the smegma bacillus from the urine. It has never been demonstrated in the bladder, and apparently seldom invades the deep urethra; therefore by cleansing the external meatus and drawing off the urine with a catheter we can exclude this possible source of error. Miller (J. L.). Medicine, Detroit, 1898, iv, 548.

A. S.

Typhoid Bacilli in the Urine.

In the urine in nine cases out of thirty-eight of typhoid fever patients, typhoid bacilli were demonstrated. The bacilli, when discoverable, were always present in large numbers, and practically in pure culture. They appeared first in the later stages of the disease and persisted, in the great majority of cases, far into convalescence. Typhoid urine should, therefore, be rigidly disinfected during the disease, and the patients, during convalescence, be carefully supervised. The writer found the presence of the bacilli practically always associated with albuminuria and the presence of renal casts. However, on the other hand, urines containing considerable amounts of albumin, and casts in large numbers, often showed no micro-organisms. Irrigation of the bladder with antiseptic solutions offers a possible means of removing permanently the germ from the urine. Richardson (M. W.)—On the presence of typhoid bacilli in the urine.—J. Exper. Med., 1898, iii, 349.

The author, in 3 out of 50 cases, observed typhoid bacilli in the urine in mass. In one case they were present for a period of two months; in the second, four weeks, beginning 10 days after the fever subsided (no signs of renal hemorrhage); in the 3rd case they were observed for eight days, begining six days after cessation of fever, and there was no sign of renal lesions or cystitis. The presence of the bacilli was demonstrated according to the culture methods of bacteriology, as well as (accidently) by swallowing some of the infected urine. A patient, in a fit of delirium and in the absence of his nurse, voided his urine in a nearby bottle partly filled with champagne. The nurse, on pouring out the fluid was struck with its peculiar turbidity. She tasted it but had swallowed a portion before detecting anything seriously wrong with it; and although vomiting followed, she became a victim to the disease, which developed in 12 days. These are points of great prophylactic importance. Such urine is almost invariably turbid. Petruschky (J.)—Ueber Massenausscheidung von Typhusbacillen durch den Urin von Typhus-Reconvalescenten und die epidemiologische Bedeutung dieser Thatsache. Centralbl. f. Bakt., &c., 1898, xxxiii, 577.

A. S.

The Alloxur Bodies and their Estimation.

From our knowledge of these bases—adenin, hypoxanthin, guanin, xanthin, heteroxanthin, paraxanthin, episarkin, carnin, epiguanin, &c., &c.—little light is thrown upon their diagnostic significance. Paraxanthin and xanthin have been definitely associated with disease. There are three methods of estimating the xanthin bases: according to Camera, Krueger-Wolf and Salkowski. The first two estimate the total nitrogenous compounds of the uric acid group found in the urine and later deduct the uric acid estimated in some other direct way. The last method estimates the bases directly. It is cumbersome, however, and open to other objections. The author's method, for which is claimed greater simplicity and rapidity with as accurate results, is as follows: To 600 cc of urine add 200 cc of Salkowski's magnesia mixture ($MgSO_4$ 1 part; NH_4Cl 1 part; NH_4OH, sp. gr. 0.924, 4 parts; water 8 parts); allow to stand one hour; filter; acidulate 700 cc of the filtrate with acetic acid; neutralize to faint alkalinity with ammonia and saturate with ammonium chloride (ca. 150 gm.); let stand three hours; filter, and wash with saturated ammonium chloride solution. Warm the precipitate in a porcelain dish with 3 per cent. H_2SO_4 and let stand 12 to 18 hours; filter; wash twice with 3 per cent. H_2SO_4 and once with water. The filtrate, including washings should not exceed 50 cc. The filtrate containing the xanthin bases is added to the first filtrate, the mixture made strongly alkaline with ammonia, 3 per cent. silver nitrate solution added, filtered, washed, and the nitrogen estimated by the Kjeldahl method. Or the silver is precipitated, incinerated, the silver dissolved in nitric acid and estimated according to Vohlhardt. This method has been rigidly controlled and found to give accurate results. The writer further employs a modification of the Hopkin's method for the estimation of uric acid: Take 100 cc of urine, acidulate with acetic acid, neutralize to slight alkalinity with ammonia and saturate with ammonium chloride (about 30 gm); after standing three hours the precipitated urates are filtered, preferably with suction pump, the precipitate well washed with a saturated solution of ammonium chloride, dried at 100° C. to drive off any ammonia; then dissolved in distilled water, boiled and let cool. Add 50 cc of a deci-normal sol. of HCl, raise to the boiling point, cool, and titrate the excess of acid with deci-normal soda sol., using methyl orange as indicator. The difference between the quantity of deci-normal HCl and soda solutions multiplied by 0.0168 will give the amount of uric acid, which divided by three will give the nitrogen. This method is, in general, not exactly correct, as some of the xanthin bases are

partially precipitated by saturation with ammonium chloride. Carefully conducted experiments showed, on the other hand, that uric acid is entirely precipitated by saturation of its solution with ammonium chloride. Xanthin is but partially precipitated. The author has failed, in his extended research, to find any relation between the xanthin bases and mental disease. The quantity varies in proportion to metabolism and inversely with the quantity of uric acid. In two cases of tabes dorsalis they were in excess. Their excessive presence probably points to lack of oxidation in metabolism. Richardson (H.) J. Am. Med. Ass., 1898, xxxi, 17.

A New Staining Apparatus.

The apparatus consists of a small metal table supported on metal legs over a flame, and having a false bottom forming a water jacket. The top of the water-bath thus constructed is divided into little square vats to contain the dyes. From the space forming the water jacket at the bottom a short tube rises. This is for pouring in water and for the exit of steam. The bath is filled with water; the dye solutions poured into the vat and the flame lighted. As soon as steam begins to issue from the tube, the fixed cover slips are laid in the vats. The temperature of the water rises to 100° C in about 4 minutes, and one filling lasts 15 minutes. Tubercle bacilli can be stained in 2 to 3 minutes, then washed and counter-stained. Spores stain in about 10 minutes. The apparatus is especially recommended for the staining of flagella. Pioxkowski.—Ein neuer heizbarer Färbetisch. Deutsch. med. Wochnschr., Leipz. und Berl., 1898, xxiv, 318. (Note. A simple expedient, which presents all the advantages of the above apparatus and further guards against evaporation—a very important matter—is suggested by Dr. C. F. Dawson, of the B. A. I., Agricultural Department. He uses an ordinary water bath, on the rings of which is placed a watch-glass. Into this the stain is poured, the slip deposited and the glass covered by inverting a second glass over it. Ed.) A. S.

A Method for the Estimation of the Agglutinative Power of Pathological Blood.

From a 24 hour agar culture of typhoid bacilli, of the greatest possible attenuation, about 3 loops are taken and thoroughly shaken in a test tube half filled with sterile bouillon. Several sterile tubes of the calibre of a lead pencil are provided. The blood is taken as for an ordinary examination, a large drop being necessary. It is drawn up into the Thomas-Zeiss instrument to the mark 1.0, and the instrument is then filled as usual, but with the above mixture or emulsion. After thorough shaking, eject the contents into one of the above slender tubes. This procedure is repeated several times, taking however, regularly decreasing proportions of blood to emulsion and ejecting into others of the slender tubes. These are then set away to await spontaneous sedimentation, or are centifuged at once. A drop of the supernatant emulsion serum of each tube is then examined by the hanging drop method. As $\frac{2}{3}$ of the volume of human blood is serum, the dilution of serum by the emulsion in the Thoma-Zeiss apparatus may be then read as follows:

Blood to mark.	Dilution of serum.
0.1	1:150
0.2	1: 75
0.3	1: 50
0.4	1: 37.5
0.5	1: 30
0.6	1: 25
0.7	1: 21.4
0.8	1: 18.8
0.9	1: 16.7
1.0	1: 15

That dilution, which, after 2 hours, just shows agglutination, marks the boundary of the power of the blood specimen and may be taken as an index of it. The more numerous the preparations made; the more accurate the test. Pfaundler (M.)—Eine handliche Methode zur Messung der agglutinativen Fähigheit des Blutes Kranker. Wien. klin. Wechnschr., 1898, xi, 517.

A. S.

BIOCHEMISTRY IN RELATION TO MEDICINE AND HYGIENE.

UNDER THE CHARGE OF
E. A. DE SCHWEINITZ Ph. D., M. D.,
Director Biochemic Laboratory, B. A. I., Agricultural Department.

The Basic Products of Diplococcus' Pneumoniae.--Andreini.

The author has studied the products formed by the diplococcus pneumoniae in culture media. He used for this purpose beef broth which was thoroughly sterilized and after inoculation was kept in an incubator at a temperature of 36° centigrade. The purity of the cultures was determined in each instance. At first the reaction of the cultures was found to be acid, this reaction growing weaker as the culture became older. After they had been allowed to grow sufficiently long they were heated to 80° centigrade, the liquid allowed to cool and treated with basic lead acid. The filtrate from this precipitate was then decomposed with H_2S for the purpose of removing the lead and this filtrate saturated with a warm solution of murcuric chloride and allowed to stand for twenty-four hours. The precipitate was collected on a filter paper, washed three times with distilled water and the soluble filtered portion was then freed from murcury by means of sulphuretted hydrogen and the filtrate evaporated to dryness. This residue was again dissolved in water, mixed with animal charcoal, warmed, filtered, and washed, and the filtrate again carefully evaporated. The residue dissolved in water was treated with an excess of silver oxide, the precipitate formed filtered out, and the filtrate treated with sulphuretted hydrogen. The silver sulphide formed was again filtered, and the filtrate from this precipitate evaporated again to dryness. In this way the author obtained a substance soluble in water, but which had strong basic properties giving a light yellow solution, and of a sienna color when dried. It was crystallizable. This material was used for physiological experiments. Guinea pigs injected with 2 c. c. of a solution of this material in the peritoneal cavity showed in a very short time, loss of appetite, difficulty of breathing and general stupor. After three to four hours these symptoms had about disappeared. Andreini (A) Beitrag zum Studium der basischen Produkte des Diplococcus Pneumoniae. Centralbl. f. Bakt., Vol. 23, Nos. 16 and 17, April 30, 1898.

The Fate of Diphtheria Toxins in the Body.--Bomstein.

The author made some investigations to see what became of the diphtheria toxin when injected into guinea pigs. He found that within 10 hours a dose of the toxin not sufficiently large to cause the death of the animal had disappeared from the circulation. He found further that the toxin was not excreted in an unchanged condition and the results of the comparisons of the effects of antitoxin upon diphtheria toxin lead to the conclusion that neutralization between these two cannot take place outside of the animal body and only when the two are mixed together in the body. These results substantiate the theory that has already been expressed by many, and would indicate the probability of the importance of a soluble ferment in counteracting the action of toxin by antitoxin. Bomstein. Ueber das Schicksal des Diphtherie toxins im Thierorganismus. Centralbl. f. Bakt., Vol. 23, No. 18, 1898.

Antitoxin Serum Treatment for Tuberculosis.--Behring.

In a paper presented by Prof. E. Behring at the International Congress for Hygiene held at Madrid in 1898, the author after reviewing in general the various lines of work in the treatment of tuberculosis, comes to the conclusion that: Of all the therapeutic agents tried those only possess a lasting interest which were obtained either directly or indirectly from

the tubercle bacilli. He thinks that a material which is certainly curative for tuberculous animals or for tuberculosis in man cannot be obtained with certainty from mammals, but that Ransom, working in his laboratory in Marburg, has obtained serum from treated fowls which possesses curative properties for tuberculosis in animals. Already in 1897 Patterson in Glasgow (The Lancet, Oct. 30, 1897), published an article upon the production of immunity by the use of serum from birds that had previously been inoculated with attenuated tuberculosis. Tubercle bacilli, as is well known, contain a large quantity of different substances. A mucin-like substance can be extracted from the germs, together with other poisons by the use of a soda solution, while ether and chloroform remove a large percentage of fat. The bodies of the germs that are left are more poisonous after the removal of these substances than before. If fat-free germs are extracted with glycerine water at a temperature of 150°, a solution is obtained which when cool allows the separation of insoluble albuminoid substances. On account of the difference in specific gravity several specific tuberculous poisons can be separated which are from 10 to 20 times more poisonous than the original material. Behring concludes that a specific poison is contained within the cell-wall which in its turn is surrounded by fat and mucin-like substances. The manner however of obtaining this tuberclosis poison is of such a nature that it can well be questioned whether or not the substance actually obtained is the poison as it originally existed in the germ, or one which has been modified by the chemical action to which it has been subjected. This question, however, can be settled by the use of a specific tuberculosis antitoxin. The test antitoxin was obtained from a tuberculous cow which for quite a long time had been treated with tubercle bacilli poison. The poison used for treating the cow had been obtained by grinding up the tubercle bacilli. The antitoxin obtained from this cow would protect guina pigs from tuberculosis when 2.5 c.c. of the serum were mixed with 1¼ to 1½ times the fatal dose of tubercle bacilli poison. By the use of this mateiral upon guinea pigs Behring comes to the conclusion that the identity of the tuberculosis poison obtained in the way indicated, with that obtained from tuberculin and other tubercle extracts is well established. He agrees however, with the view generally expressed by all conscientious experimenters, that while great advances have been made and much has been learned in regard to the antitoxic serum treatment for tuberculosis, necessarily a long time must elapse before this work can be considered to be upon a firm basis.—Behring (E.) Mittheilungen aus dem Institut für Experimentelle Therapie in Marburg, Deutsch. med. Wchnschr., April 19, 1898.

The Results in the Cases Vaccinated against Rabies at the Pasteur Institute in 1897.

One thousand five hundred and twenty-one cases were treated, 6 of which died, giving a mortality of 0.39 per cent. The following table gives a report of cases treated at this institution during previous years:

Year.	Number of persons treated.	Deaths.	Mortality.
			Per cent.
1886	2,671	25	0.94
1887	1,770	14	0.79
1888	1,622	9	0.55
1889	1,830	7	0.38
1890	1,540	5	0.32
1891	1,559	4	0.25
1892	1,790	4	0.22
1893	1,648	6	0.36
1894	1,387	7	0.50
1895	1,520	5	0.33
1896	1,308	4	0.30
1897	1,521	6	0.39

Ann. d. l'inst. Pasteur, Vol. 21, No. 4, Apr. 25 1898.

The Gall of Rabid Animals as Antitoxin for Rabies.--Frantzius.

The author has examined the gall of healthy oxen, sheep, swine,&c. in order to see if they contain any antitoxic substance which would protect from rabies. The results were negative. He found however that the gall of animals that had died from rabies contained an antitoxin, the strength of which was greater than that of any antitoxin derived from a different source heretofore described,

He thinks that the conclusion is justifiable that when animals are affected with rabies a considerable quantity of antitoxic substance collects in the gall.—Frantzius (E. J.) Die Galle toller Thiere als Antitoxin gegen Tollwut. Centralbl. f. Bakt., Vol. 23, No. 18, 1898.

Bacterial Nucleo-Proteids—Galeotti.

The author reports some investigations upon the character of the immunizing substances obtained from cholera cultures. He found that these belong to the group of the proteids, although they had a different chemical constitution. The one of these substances that contained the largest amount of phosphorus possessed the greater immunizing properties. A similar substance was obtained by the author and Prof. Lustig from cultures of the pest bacillus. A bacillus which resembled the bacillus anicidus of Ernst and yielded a similar substance, served as the source for a sufficient quantity of this material for study. It was cultivated with the best advantage upon potato. After growing for several days the cultures were scraped off from the surface of the potato and dissolved in one per cent. caustic potash by rubbing them up with this material and water. In this way a slimy, stringy mass was obtained which could be drawn out into very long, thin threads. This mass was then shaken with large quantities (from two to three litres) of a one-half per cent. acetic acid solution. After continual shaking large flakes were formed that settled to the bottom. This precipitate was collected upon a filter, washed with acidified water, then with pure water, re-dissolved in weak ammonia, filtered and re-precipitated with acetic acid. The precipitate was finally washed with alcohol and ether and dried. In this way a yellowish-white substance was obtained which could be rubbed up into a completely white powder, soluble in alkaline solutions. Its principal properties are, insolubility in the ordinary solvents and in distilled water; solubility in alkali giving an opalescent solution, partially soluble in 10 per cent. salt solution and insoluble in dilute acids. It is precipitated from alkaline solutions by neutralization or by weakly acidifying. It is precipitated by the salts of the heavy metals, zinc chloride, silver nitrate, alcohol, tannin and also by saturation with ammonium or magnesium sulphate. It gives also the Millon's and xanthoproteic reactions and with potassium hydrate and copper sulphate a grayish-green precipitate is obtained. The other properties show the substance to belong to the group of the nucleo-proteids. Galeotti (G.) Beitrag zur Kenntniss der bacteriellen Nucleo-Proteide. Zeitschr. f. physiolog. Chemie, 25, pt. 1 and 2, 48.

Blood and Organ Toxins.

The investigations of Uhlenhuth have shown that the blood serum from man and swine, cattle, rabbits and sheep contains considerable quantities of a necrotic poison. The serum of horses does not contain this poison. Brieger and Uhlenhuth have made some experiments to determine the nature of this pison. It does not appear to be allied to any of the soluble ferments which are present in the blood in the circulation, but it appears to belong to the group of tox-albumins. The toxins of the blood serum are unstable. They are precipitated by alcohol but lose in this way their physiological action, which is not changed by dialysis or filtration. They are precipitated by ammonium sulphate and the chlorides of some of the heavy metals almost quantitively. As the horse serum does not contain this toxin, the idea occurred that possibly it contained a protective substance, a supposition which experiments proved to be erroneous. In fact the organs, as the brain, liver, kidneys, lungs, spleen, marrow and lymphatic glands, appear to contain considerable amounts of toxic substances. The organs of the horse also contain this toxic substance, although this toxin is not found in the circulation. The toxin can be obtained from the organs in which it is contained by alkali solutions, but not by physiological salt solutions. It is destroyed by acids and by heating and precipitating by alcohol. These toxins lose their poisonous properties by heating for one-half hour at 80 degrees centigrade while they can withstand heating for one-fourth hour at 70 degrees. Brieger und Uhlenhuth. Ueber Blut-und Organgifte. Deutsch. med. Wchnschr., 1898, No. 10.

Therapeutic Notes.

Stomachic Tonic.

H. C. Brainard, M. D. says he has used Gray's Glycerine Tonic Compound in the Cleveland Protestant Orphan Asylum, and has found it one of the most efficient stomachic tonics he ever used. In general practice he has gotten the most satisfactory results in cases where it is indicated. He believes much of its highly commendable action is from the superior compounding of its formula.

Surgeons-General of the Navy.

The Maltine Company has issued a series of portraits of the first eight Surgeons-General of the Navy which will doubtless prove of interest to the medical profession especially at this time. This series will be followed in a short time by another, forming a complete historical record and one not otherwise obtainable. Write to the company for both series.

Uric Acid and Disease.

In late years much has been written concerning the significance of uric acid in the causation of various diseases, and there is reason to believe that the accumulation of this substance in the body is responsible for a long train of symptoms formerly attributed to other causes. Sometimes the joints suffer most severely from the injurious action of uric acid, as in articular gout. Sometimes the kidneys are chiefly attacked, with the production of interstitial fibrous changes and uratic deposits. In still other cases the manifestations of the uric acid diathesis are most pronounced in the nervous system, the most frequent result being a neurasthenic state. Lycetol exerts a specific influence upon uric acid, rendering it more soluble and promoting its excretion in the urine. The average dose is 15 grains daily, which is best given in a carbonated mineral water, or in the form of the lycetol gout water. The factors concerned in the excessive formation of uric acid must be removed.

An Item of Information.

The hypnotic effect of Bromidia does not by any means represent the sole benefit to be derived from this preparation, but it meets, in a very perfect manner, many other indications involving hyperaesthesia of nerve tips and over-excitability of spinal cord. In doses of one-half teaspoonful, given every four hours for two days, will so benumb the sensory nerve tips of the buccal cavity that dentists can take impressions of the mouth, fit in rubber dams, etc., that would otherwise be impossible on account of the gagging peculiar to some patients. In the hands of the medical practitioner, given in half-teaspoonful doses every four hours it will make life endurable for hay-fever patients during the months of August and September. A teaspoonful will completely quiet the paroxysmal pain following childbirth or miscarriage without in any way interfering with uterine contractions.

For Hay Fever.

From the experience of a number of prominent specialists it is learned that an excellent prescription is compounded from 120 grains of Quinine Hydrobromate, 15 grains of Antipyrine, 1 drachm of Gum Camphor, 15 grains of Cocaine Hydrochlorate, 20 Minims of Acid Hydrochlorate and enough Benzoin Nebulizing Fluid to make 4 ounces of solution. This is to be applied with Nebulizer 3 to 5 times daily. Immediate relief will be given even in the most aggravated cases of Hay Fever. Its thorough and persistent use obviates the necessity of a change of climate and in time produces a permanent cure. For further particulars write the Globe Manufacturing Company, Battle Creek, Michigan.

The Prompt Solution of Tablets.

The Journal of Practical Medicine says we are glad to know that the Antikamnia people take the precaution to state that when a prompt effect is desired the Antikamnia Tablets should be crushed. It so frequently happens that certain unfavorable influences in the stomach may prevent the prompt solution of tablets that this suggestion is well worth heeding. Antikamnia itself is tasteless, and the crushed tablet can

be placed on the tongue and washed down with a swallow of water. Proprietors of other tablets would have had better success if they had given more thought to this question of prompt solubility. Antikamnia and its combinations in tablet form are great favorites of ours, not because of their convenience alone, but also because of their therapeutic effects.

Apartment Disinfection.

The value of formic aldehyde gas in disinfecting is now generally recognized, but there have been many difficulties attending its efficient application. The volume used must be amply large and liberated with sufficient rapidity to overcome all the disadvantages resulting from leakage from the room being disinfected. Dry heated gas is of highest value because it is most penetrating and, having a specific gravity equal to that of atmospheric air, mixes freely with air, thus producing its effects wherever air can penetrate.

In an effort to secure the best effects the following simple apparatus (shown in the illustration) has been devised. It consists of a Swiss heating lamp beneath a reservoir for commercial formaldehyde. Between these is a copper coil opening into the receiver and ending in a short gum hose, at the distal end of which is a thin feeding tube. The opening from the reservoir into the tube is protected by a valve. When the tube is red-hot, the valve is opened to admit a small stream of solution of formaldehyde. This is instantly vaporized and the liberated gas and vapor intensely heated as it passes through the coil. The gas is not liberated under pressure hence there can be no danger from inflammation or explosion. By means of the feeding-tube, an apartment is filled with gas through a key-hole or other suitable opening.

The apparatus is always on the outside of the apartment being disinfected, and is capable of filling an ordinary room within half an hour, so that one operator can easily disinfect as many as two dozen rooms per day, if not too remote one from the other. The apparatus can be obtained of H. K. Mulford Co., Philadelphia.

A New Ointment.

Dr. G. L. Meredith of Troy, N. Y writes to the Editor of the American Gynecological and Obstetrical Journal as follows:

For about five years past there has been a preparation, in the form of an ointment, used amongst a few physicians of this locality which, from its intrinsic merits, demands a more universal introduction to the medical profession.

I wish to use a small space in your journal to relate my experience in its use in the gynæcological field:—I have during the past year used it in preference to all other preparations to reduce the inflamed, ulcerated and engorged conditions of os uteri due to old and neglected lacerations with a result showing improvement from the first application, that surpasses any other preparation I have ever used.

This is rather a new application for the remedy, as it was originally intended as a specific for indolent, varicose and syphilitic ulcers. The results achieved in these cases together with the composition of Pixine led me to apply it in this class of cases with the happy results mentioned.

It is a thoroughly aseptic, antiseptic and stimulating ointment composed of tar, turpentine, beeswax with oleaginous base, and the general practitioner is constantly meeting cases calling for just such an ointment, and I feel that there are now so many ointments that are worthless that when one finds a good one it is but due the profession to announce it.

Massies' Mills, Va., Oct. 25, 1897.

I received your bottle of McArthur's Syrup Hypophosphites, and used it in a case of general debility and wasting from a long spell of sickness. It proved far more than I expected, and have been prescribing it in my practice whenever cases demanded it. I have always met with good results from your Syrup, and shall continue to use it when cases, in my judgment, demand it. It is far superior to the other brands of Hypophosphites.

J. P. PEELLIAM, M. D.

TRANSACTIONS OF THE MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA.

EDITING COMMITTEE:

W. W. JOHNSTON, M. D., GEO. M. KOBER, M. D., JAS. D. MORGAN, M. D.

MEETING OF FEBRUARY 23, 1898. Dr. S. C. Busey, President, in the Chair.

(Continued.)

But notwithstanding the fact that there are now only 134 public pumps in service, and that since 1880 334 wells have been filled, and notwithstanding the fact that in July, 1880, we had only 154.13 miles of sewers, as compared with 365.42 miles at the close of the last fiscal year, our typhoid-fever rate has gradually increased, except during the past two years, showing conclusively that they were not the only cause, and the other cause or causes must be paramount.

From the evidence collected by me in 1890 and 1895, and more recently by the Geological Survey, there can be no doubt about the increased sources of pollution of the Potomac water, which constitutes our general water supply. Washington receives the sewage of Frederick, Cumberland, and Harpers Ferry, besides that of about 25,000 people living in smaller towns and settlements along the watershed, and there can be no successful concealment of the fact that the same showers that bring to us large sections of pulverized river banks, wash through the towns, barnyards, cesspools, and outhouses before finding their way to the river. It has been estimated by Mr. Davis, one of the hydrographers of the Geological Survey, that the sewage from the vicinity of Cumberland and other towns requires only from two to four days to reach the Washington Aqueduct.

We know that typhoid fever prevails among the inhabitants of the watershed and that sewage bacteria are almost constantly found in the tap-water; and since pollution is not tolerated near the intake of our river water I maintain that the presence of fecal bacteria is evidence of some distant source of polution, and that they have not been destroyed by the natural agencies which are believed to be all sufficient by the advocates of the theory of self-purification of streams. While it is true that so far the specific germs of typhoid fever have not been demonstrated in our drinking water, it is equally true that they were not isolated in the well at Takoma which infected 11 persons and where the bacteriologist simply found the colon bacillus, which is evidence of fecal contamination. But all this is not very surprising, since the best bacteriologists have failed to find the germs of typhoid fever under conditions strongly suggestive of their presence. Surely we ought not to wait until they are demonstrated in the spigots of our homes.

TYPHOID FEVER AT CUMBERLAND, AND ITS POSSIBLE EFFECTS IN THIS CITY.

My suspicions that the typhoid bacillus may travel all the way from Cumberland and infect susceptible persons in Washington were confirmed, as early as the winter of 1889-90, by studying the effects of the typhoid fever epidemic at Cumberland upon the prevalence of the

disease in this city. The records of the Health Office show that during this epidemic, from December, 1889, to April, 1890, the deaths from typhoid fever amounted to 74, as compared with 42 for the corresponding months of the previous year. Indeed, we had almost double the number of typhoid deaths during these months than for any similar period, either before or since this epidemic. (See Table III.)

Cumberland had about 45 deaths and 485 cases; this city had 74 deaths, or about 740 cases, and yet the starting point of all was the excreta of one patient, washed into a little run which empties into the Potomac about 300 feet above the pumping station at Cumberland.

In the face of this fact and our knowledge of the life history of the germ,* and the almost constant presence of fecal bacteria, I have no hesitation in declaring that our excessive typhoid-fever rate is largely due to contaminated Potomac water, for were it otherwise our rate would have decreased with the number of pumps and box privies abandoned and other important sanitary reforms.

WHAT IS THE REMEDY?

You will ask, Can the evil be corrected? and I unhesitatingly answer, Yes; because a study of the subject reveals the significant fact that cities, both at home and abroad, in which there has been the most marked decrease in the typhoid-fever death rate are those in which a pure water supply has been substituted for a pre-existing contaminated one.

The subjoined table is taken from Mr. John W. Hill's most excellent essay on the "Hygiene of water" (Dietetic and Hygienic Gazette, October, 1896). I have modified the table and added the rates before the introduction of a better water supply in some of the German cities, lest there might be an impression that the Germans abjure water altogether and drink beer or wine instead. The table gives the deaths by typhoid fever in 1895, per 100,000 living, of 10 cities in Europe having excellent water supplies, as compared with 10 cities in our own country having what are known to be water supplies of poor quality, and shows that the average rate for the American cities is 56.4 as against 6 for the foreign rate.

The influence of care in the selection of drinking water.—But, as a matter of fact, we need scarcely go away from home in order to determine what care in the selection of drinking water will accomplish. Thus, for example, while the suburbs and northeast, during my investigation in 1895, furnished a rate of 84.4 and 87.6 per 100,000, the rate in the northwest, i. e., the region west of Thirteenth Street to Rock Creek and north of the Potomac to Florida Avenue, was only 17.1, or only a slight fraction over that of Lynn, Mass., which city has a rate of 16, and stands at the head of American cities as regards exemption from typhoid fever.

In my official report I said:

> The question as to how much of the immunity from typhoid fever in the northwest section is due to use of domestic filters and the sterilization of the water by boiling cannot be decided except by a census of all the houses, but in my judgment these precautions have been quite general and proved of great benefit.

Körösi, Budapest, has shown by statistics that of 7,000 residents in the most fashionable part of his native city, those who used filtrated water contributed 9.3 cases per 1,000, while the consumers of unfiltered water furnished 14.1 cases per 1,000.

But, assuming that there are 50,000 people in this city who drink water purified by domestic means, and that quite a number may even indulge in Apollinaris and other sparkling table waters, we should remember that we have a population of 277,782, the majority of whom are too poor to buy any kind of filter, much less the more reliable and expensive patterns.

But apart from this, it ought not to be necessary for the householder to adopt

*Wolffhugel and Uffelmann have shown that the bacilli of typhoid fever retain their vitality for a certain length of time in ordinary water. Prudden has shown that they remain viable in ice for one hundred and three days, and Uffelmann's experiments indicate that they may live in decomposing fecal matter for a year, at least.

TABLE I.—*Typhoid fever death rate per 100,000 of population living, based upon the vital statistics for the year 1895.*

Cities.	Before obtaining a pure water supply.	After securing a pure water supply.	Source of supply.
Munich	210	3	Springs.
Vienna	181	6	Do.
Berlin	100	5	Filtered river and lake water.
Breslau	113	9	Filtered river water.
Hamburg	21	9	Do.
The Hague		5	Filtered.
Roterdam		2	Do.
Stockholm		9	Deep wells and lake.
Christiana		7	Filtered.
Dresden		5	Deep wells and filter gallery.
Average		6	

UNITED STATES.

Cities.	Number.	Source of supply.
Buffalo	29	Lake Erie.
Chicago	32	Lake Michigan.
Cleveland	36	Lake Erie.
Cincinnati	36	Polluted river water.
Philadelphia	40	
Washington	69	
Jersey City	71	
Pittsburg	77	
Louisville	77	
Indianapolis	97	
Average	56.4	

domestic precautions. It is clearly the duty of the state or municipal government to provide a pure and wholesome quality of water.

Since our supply is dangerously polluted, we should either find a new and pure supply, and keep it so, or purify the present supply.

Of these two alternates, the cheapest and most effective one for this city is filtration.

Mechanical and Natural Filtration.—There are two methods of filtration on a large scale, viz: mechanical or rapid filtration and natural or slow filtration.

The mechanical filters, according to Mr. Hill, have accomplished very little in the reduction of typhoid-fever death rates in cities where they are used.

In the subjoined table five American cities using these mechanical devices are compared with five cities in Europe using water from the continuous sand filters with an average for the year 1895 for the American cities of 46.8 typhoid deaths per 100,000 living, against 6 deaths per 100,000 for the foreign cities; that is to say the American rate was almost eight times greater than the foreign rate.

EUROPE.

[Sand filtration,]

Rotterdam	2
Berlin	5
The Hague	5
Breslau	9
Hamburg	9
Average	6

UNITED STATES.

[Mechanical filters.]

Davenport	26
Atlanta	43
Chattanooga	48
Quincy, Ill	58
Knoxville	59
Average	46.8

Effects of pure water and air upon death rates.—When we remember that the general mortality of London a century ago was still 40 per 1,000, while at the present time it is between 20 and 21 per 1,000, and that no factors have contributed to the prolongation of human life so much as the improvement of the air we breathe and the water we drink, I hope you will agree with me that it is high time for civilized communities to take steps toward removing the danger to be found in rivers which are the sewers and at the same time the source of public water supplies.

We should not think of establishing a vicious circle between our mouths and the drainage of our houses and stables, and yet practically we have suffered this to be done by others upon the erroneous assumption that rivers purify themselves.

I confidently expect as a result of filtration not only a decided decrease in typhoid fever, but in other diseases, like cholera morbus, diarrhea, dysentery, and malaria, which are influenced if not caused by infected water.

Effects of the Dalecarlia reservoir are a sedimentary basin upon our typhoid fever death rate.—I have recently gathered facts which I believe justify all that I have ever said in condemnation of Potomac water and more than vindicates our claim as to the imperitive necessity of purifying the water. It is well known that sedimentation plays an important part in the purification of water, and I will now direct your attention to figures which show what influence this method alone has exercised upon our typhoid fever rates. The subjoined table gives the typhoid fever rate in this city from July, 1879, to January 1, 1898.

The Dalecarlia reservoir was in almost uninterrupted use as a sedimentary basin from July 1, 1879, to June 3, 1885. Mark the comparatively low typhoid fever rates: From June 3, 1885, to July 28, 1886, the sedimentary basin was not in use; note the difference. From July 28, 1886, to April 6, 1887, it was in use; note the decline. Again mark the decided increase when not in use from June 20, 1888, to July 28, 1895, and the decided decline since its use in August, 1895. It should be remembered that of the 228 cases which occurred from July 1, 1895, and June 30, 1896, 194 deaths occurred in 1895 and only 34 in the six months ending June 30, 1896. The very high rates from August to October are unaccountable, unless due to local pollution while the reservoir was out of service. This table speaks for itself, and that bacterial purification does take place in sedimentary basins can not be questioned after examining Professor Frankland's tables:

	Bacteria per c. c.
New River Company, at Stoke Newington:	
Cutting above reservoir	677
After passing—	
First reservoir	560
Second reservoir	183
West Middlesex Company, at Barnes:	
Thames water at Hampton	1,437
After passing—	
First reservoir	318
Second reservoir	177

Our own Dalecarlia reservoir could be very much improved, but its value as a sedimentary basin is shown by these figures, and fully sustains our plea for filtration, because, as a means of complete purification sedimentation alone can not be relied upon. The figures also emphasize the necessity for the early completion of the tunnel, so that the storage capacity and length of time allowed for sedimentation may be increased almost twofold.

Special attention is called to the very high typhoid fever death rates in connection with the epidemic at Cumberland and during a time when, from October 4, 1889, to March 18, 1890, the distributing reservoir was out of service and the water was served without any sedimentation.

Until we secure a purer water supply, for the sake of suffering humanity and the fair name of our National Capital, let us not relax our efforts in sanitation, but endeavor to diminish the dangers to a minimum by boiling our drinking water and milk, and by thorougly disinfecting the excreta of every typhoid fever patient.

TABLE III.—*Number of deaths, by months, in Washington, D. C., from typhoid fever, from July, 1879, to January 1, 1898.*

Fiscal year July 1 to June 30.	July.	August.	September.	October.	November.	December.	January.	February.	March.	April	May.	June.	Total.	Annual death rate per 100,000.	Remarks.
1879-80	10	16	19	12	7	3	6	2	5	2	6	6	84	47.3	
1880-81	8	9	5	11	4	7	5	3	2	5	4	4	67	36.6	
1881-82	6	17	17	28	14	6	7	8	6	5	5	1	120	63.6	Dalecarlia reservoir as a sedimentary basin in use except during intervals of a few days.
1882-83	11	16	7	17	6	2	5	6	8	4	5	5	92	48.0	
1883-84	12	8	10	5	6	9	3	4	5	5	3	6	76	38.6	
1884-85	7	13	21	26	13	19	6	2	4	1	1	11	124	61.6	
1885-86	19	16	14	19	9	13	7	5	10	7	6	3	128	59.3	Dalecarlia reservoir not in use from June 3, 1885, to July 28, 1886; in use from July 28, 1886, to April 6, 1887; not in use from April 6, to May 7, 1887; in use from May 7, 1887, to June 20, 1888.
1886-87	15	19	15	13	12	16	4	6	6	4	2	4	116	55.3	
1887-88	18	32	22	20	18	15	8	7	8	7	3	10	168	78.0	
1888-89	12	23	27	34	19	7	14	7	9	5	6	7	170	76.3	
1889-90[a]	23	18	29	15	18	29	9	6	19	11	10	21	208	89.5	
1890-91	33	26	29	30	21	17	12	6	12	9	5	8	208	85.5	Dalecarlia reservoir not in use from June 20, 1888, to July 28, 1895, except during intervals stated in letter of Captain Gaillard.
1891-92	6	22	21	36	26	12	13	13	8	7	8	11	183	72.0	
1892-93	19	21	31	22	25	18	6	7	6	11	11	10	187	71.7	
1893-94	21	24	28	23	23	21	10	5	5	6	5	20	191	72.0	
1894-95	33	30	26	30	24	16	3	8	2	1	6	8	187	69.1	
1895-96	12	27	56	55	24	20	9	8	3	3	4	7	[b]228	82.7	Dalecarlia reservoir in use.
1896-97	8	15	25	25	18	16	13	4	4	4	6	9	147	53.1	
1897-98	10	16	18	10	9	18	(c)	(d)	(d)	(d)	(d)	(d)	111	39.6	
Total	283	368	420	431	296	264	140	107	122	97	96	151	2,775	65.2	

a Distributing reservoir out of service from October, 1889, to March 18, 1890.
b Of these 228 deaths, 194 occurred from July, 1895, to December 31, 1895.
c Actual number of deaths from July 1, 1897, to December 31, 1897, 81.
d Estimated number of deaths 30 from January 1 to June 30, 1898, based upon an estimated decrease for the six months ending June 30, 1898.

Appendix C.

Office Washington Aqueduct,
Washington, D. C., February 24, 1898.

Dear Sir: In reply to your verbal request as to the period, between 1879 and 1898, when the Dalecarlia reservoir was out of commission, I have the honor to give the desired information herewith:

Dalecarlia reservoir out of service.		Reason.
From—	To—	
Aug. 3, 1880	Aug. 10, 1882	Muddy water in the reservoir from streams entering same.
Sep. 14, 1881	.....	
Jan. 6, 1882	Jan. 10, 1882	
Feb. 26, 1882	Mar. 3, 1882	
Mar. 7, 1882	Mar. 20, 1882	
Apr. 3, 1882	Apr. 28, 1882	
June 7, 1882	June 12, 1882	
Aug. 11, 1882	Aug. 18, 1882	
Sept. 20, 1882	Sept. 21, 1882	
Mar. 3, 1883	Mar. 10, 1883	Cleaning out mud from reservoir near north connection.
Mar. 19, 1883	Apr. 1, 1883	
June 17, 1883	June 27, 1883	
June 3, 1885	July 28, 1886	Reservoir out of service on account of apprehended pollution from small streams flowing into it. Only used when river was very muddy, when cleaning north connection, constructing waste-weir, cleaning conduit, and when distributing reservoir was out of service. Works of protection against pollution completed and reservoir put into permanent commission July 28, 1895.
Apr. 6, 1887	May 7, 1887	
June 20, 1888	Nov. 12, 1889	
Dec. 1, 1889	Nov. 22, 1891	
Nov. 25, 1891	Dec. 3, 1891	
Dec. 6, 1891	July 28, 1895	
June 6, 1897	June 7, 1897	Current meter observations.
Oct. 4, 1889*a*	Mar. 18, 1890*a*	Building new gatehouse and connecting new 48 inch main.

a Distributing reservoir out of service.

Very respectfully,
D. D. Gaillard,
Captain, Corps of Engineers
Dr. George M. Kober,
1819 Q Street NW., Washington, D. C.

Discussion by Dr. J. J. Kinyoun, Marine Hospital Service.

Mr. Chairman and Gentlemen: In 1891, soon after my assignment in Washington, I became interested in the bacterial flora of the Potomac water, and during that year made a series of observations thereon. These observations had not been continued very long before a certain group of bacteria were recognized, which persisted for some time. The time of the examination, I may state, was in the summer and fall and when typhoid fever and other diarrheal diseases were prevalent. These studies were continued from time to time during the years of 1892, 1893, and 1894, especially in 1893 and 1894, when cholera was engaging our attention. I became soon convinced that in the event of cholera gaining a foothold in this country east of the Allegheny Mountains it would be an easy matter for the water supply of Washington to become infected. This latter fact was emphasized all the more when, in 1894, an immigrant, just landed, was reported to have died of cholera in Cumberland, Md., 125 miles above Washington, on the Potomac River. Fortunately for all concerned the case was not cholera and no harm came of it. But, suppose the contrary, what would have been the result?

In 1894 the Medical Society of the District of Columbia appointed a committee to report on the prevalence of typhoid fever in the District. In due time the report was rendered. This report dealt especially with the cause of typhoid fever and diarrheal diseases be-

ing due to the shallow surface wells which at that time abounded in many parts of the city, some of which were nothing more or less than catch-basins for sewage. Quite a number of these wells were given a bacteriological analysis by the writer, with the result of finding nearly 75 per cent undoubtedly contaminated with intestinal bacteria. Now, these wells were unquestionably the source of infection from typhoid fever in many instances. In the following year, 1895, a serious outbreak of typhoid fever occurred in Washington, and so serious was it that a special inspector was appointed to investigate and report thereon. I did not appreciate how serious it was until in an unguarded moment I consented to aid Dr. Kober, the inspector, in his investigations by making the bacteriological analysis of samples of water from suspected sources.

Between September 24 and December 15 over 200 samples of water were examined, 135 from original sources. No one perhaps but a bacteriologist can appreciate the enormous amount of work that is required in making such an analysis. The results of the investigation, briefly stated, were these:

In 70 wells, springs, and public water supply sewage bacteria were isolated from 26, and 21 of these contained intestinal bacteria. Dr. Kober's investigation showed clearly that the majority of cases of typhoid fever occurring in this city was directly traceable to wells and springs. There were quite a number of cases, however, whose source of infection could not be traced to these. During this time the Potomac water came in for its share of attention, and the analysis showed that in the five weeks following from October 1 the water was found to be contaminated with fecal bacteria in six out of ten examinations.

In my report submitted thereon I called attention to this fact. While the wells and other sources of water supply were largely responsible for the condition that existed then, the Potomac water was undoubtedly contaminated, and was in some way responsible for the causation of typhoid fever and kindred diseases. It was thought at that time that sufficient evidence had been presented to convince everyone that the cause of the sad condition was proven beyond the shadow of a doubt, and it remained only for us to apply the remedy.

Such appears not to have been the case. Wells which have been closed by reason of their being contaminated have been reopened and their opening sanctioned by the authorities, and now there are some persons yet living who are preaching that aeration and sedimentation would purify any river water, it matters not how badly it is contaminated. Hamburg thought so once. The reports of the District society and of Dr. Kober were like making a diagnosis by exclusion.

Special prominence was given in the former, and emphasized by the latter, that the contaminated wells, or those liable to become contaminated, should be closed. In many instances this has been done, and the effect of closing these wells was noticeable with regard to the diminution of cases of typhoid fever and diarrheal diseases in the localities where the former water supply was drawn from these sources. While typhoid fever and other diseases are not now so prevalent in these localities, the general morbidity and mortality rate in Washington is about the same. The only difference is that the disease is prevalent, appearing in all parts of the city. Now the exclusion of the infected wells and springs leaves only one other source to be considered, and that is our public water supply.

On July 1 last an inquiry was instituted in the hygienic laboratory of the Marine-Hospital Service to determine the actual biological conditions of the Potomac River and to determine the cause of its pollution.

This inquiry was intended as a preliminary to an investigation into the pollution of water supplies of the United States where the sanitary conditions of the people of one or more States were involved. This inquiry has been conducted by my colleague, Dr. Sprague, who kindly placed at my disposal his notes and observations made on the public water supply. While this investigation is by no means complete, it is believed that sufficient progress has been

made therein that some conclusion can be formed as to the condition of this water supply. The bacteriological examination of the tap water was made every three or four days from July 1 to the present time. In these examinations special attention was given to the detection and isolation of the colon and sewage groups of bacteria. The method and technique employed in these analyses are too long to be given in detail. Suffice to say that the methods which were practiced are those recognized as standards by bacteriologists.

The number of bacteria found in the water was never at any time very high, ranging between five and five thousand per cubic centimeter, the greatest number occurring just after a rainfall. As I have previously stated, it was my belief that Koch's standard of the purity of a water supply could not be accepted unless the character of the bacteria also be taken into consideration. His statement was to the effect that a water supply containing over 400 bacteria to the cubic centimeter was suspicious, and that a water supply containing not more than 100 could be accepted as potable. Now, my contention is this: Two intestinal bacteria have more significance than 100 of those ordinarily found in water, and if there is a persistence of intestinal bacteria it matters not whether they come from man or animals. A water supply containing these should always be looked upon with suspicion. Dr. Sprague has found that the sewage group of bacteria are almost always present, and the examinations from July 1 until the present time demonstrate that this group of bacteria go *pari passu* with the intestinal group.

The most striking result of the examination lies in the fact of the isolation of the intestinal group of bacteria, as the following will show:

Per cent of cases in which the colon was isolated.

	Per cent.
In July, out of 10 examinations	30
In August, out of 9 examinations	33⅓
In September, out of 8 examinations	75
In October, out of 8 examinations	75⅓
In November, out of 8 examinations	37½
In December, out of 9 examinations	20
In January, out of 9 examinations	20
In February, out of 8 examinations	25

In my former examinations of the water, especially in July, August, and September, the colon (or intestinal) group was isolated more frequently than at any other time of the year. Now, let us compare the result of this latter examination with the annual curve of mortality from typhoid fever. It becomes immediately significant. We find that the curve of the intestinal bacteria, estimated in percentages, is identical with that of typhoid fever occurring during the past year; or a further comparison can be made by taking the annual mortality curve for the past ten years, and this bacterial curve closely follows it. We can state that there is a connection between the intestinal bacteria found in the water supply and of typhoid fever, notwithstanding that the typhoid bacillus has not yet been isolated from the Potomac water. So far there are only two instances on record where the typhoid bacillus has been isolated from a public water supply. There are many theories advanced to explain why we do not find this germ in the water, but no satisfactory explanation has yet been given. I, for myself, do not know.

We then have to rely on the next best —the intestinal group—which we know is always associated with the typhoid bacillus in the dejecta of those ill with the disease. We also know that sources of water supply which are liable to become contaminated with the colon group are also liable to become infected with the typhoid bacillus. As Dr. Kober has so clearly set forth the influence of contaminated water supplies upon the typhoid death rate, I will not burden you with giving the statistics which I have prepared.

In determining the sources of the pollution of the Potomac River, we availed ourselves of the aid of the Geological Survey in collecting samples at various places on the Potomac and its tributaries above Great Falls. From September 1 to December 15, 55 samples of water were collected under the direction of the hydrographer, Mr. Newell, of the Geological Survey, and sent to the laboratory for examination.

In the accompanying chart will be seen the places at which the samples

were taken; these are marked by blue stars, and at places marked red on the chart Dr. Sprague found the presence of the colon group. Now, these samples, with the exception at Piedmont, Va., and Cumberland, Md., were taken from tributaries of the Potomac and not from the Potomac proper. The results very clearly show that these streams, the majority of which are contaminated, are constantly pouring into the Potomac their sewage. Dr. Kober has already mentioned the fact of the relation between typhoid fever epidemics in Cumberland, Md., and the increase in the death rate from typhoid fever in Washington. I am now more firmly convinced than ever that the sewage group of bacteria, when once entering the Potomac River as far up as Cumberland, or even beyond, can be carried to Washington before these bacteria die or disappear. It is established by Mr. Newell that a volume of water flowing into the Potomac at Cumberland, Md., can reach Washington within a space of four days. The intestinal group of bacteria live in water a much longer time than four days, the length of its life depending largely upon the amount of sewage contained in the water.

Now, what is the remedy? It may be considered in one of several ways First, the control of the watershed and the abatement of the nuisances thereon; second, seeking another source of water supply; third the filtration of the present supply. The first proposition would be impracticable on account of the area covered by the watershed; this, according to the Geological Survey, is about 11,000 square miles and located in Virginia, West Virginia, Maryland, and Pennsylvania. In all, four States. The second proposition is also impracticable, because there is no watershed of sufficient area near Washington which could be used for the purpose. Even if so, the expense of purchase and policing would be greater than would be met by Congress. It has also been suggested to obtain a water supply by a system of artesian wells. On account of the geological formation of the country near Washington, this would also be impracticable. The last proposition I hold is feasible, and that is the filtration of the present supply.

At this juncture it may be proper to say something about what is meant by filtration. Formerly filtration meant the removal of mechanical particles from water; in other words, rendering muddy water clear. For many years this was considered all that was necessary, and even at present there are a number of firms and corporations who are extolling the different forms of filtering apparatus designed for this purpose. Filtration should mean the removal of bacteria and not simply inorganic particles from water. It has been suggested to use domestic filters for a purification of water. While some filters on the market are fairly good, there are none which perform their work properly and remove the bacteria for any length of time. If we could be assured that the same attention would be paid to a domestic filter which we give to our milk cans and the like the filters would do good service, but if they are neglected they are really a greater menace to the public health than drinking the raw, unfiltered water.

Many years ago some of the larger English cities accidentally solved the question of filtration. Filter beds were constructed by these cities for the purpose of filtering out the mechanical particles. On recent investigation it was found that these filter beds also removed bacteria as well, and in those places where the filter beds were in operation a notable decrease in the prevalence of diarrheal diseases was observed. On investigation it was also demonstrated that the suspended particles in the water, falling upon these sand filter beds, served the useful purpose of keeping in check the bacteria, and in this way accomplishing true filtration. The question of the filtration of a public water supply is solved, and it only needs the application of sand filtration to the water supplies of the cities of the United States to protect them from the annual scourge of typhoid fever. I believe that it is unnecessary for us to further investigate this subject; the time has come for us to act.

No good will come from the appointment of a peripatetic commission to go to Europe to investigate the filtering sys-

tems of those countries. Their mechanical construction and methods of operation have been on trial for a number of years, and those who have evinced interest on this subject can well inform themselves upon their construction and method of operation.

Further, I may add that the filtering appliances of the European cities have undergone little or no change in the last three or four years. When a sand filter bed of simple construction removed 98½ per cent of bacteria from a water supply containing ten times the contamination of the Potomac River, there is little room for improvement. It is at least so regarded by the authorities. Consequently little or no good would come of an investigation of these filter beds, but in fact only harm at this juncture, because of the delay. We can at once commence to construct a filter bed, and thus save the time it would require for a commission to report on what practically is already known.

While I believe the estimates submitted by the Engineer Corps of the Army are too high, but even at the cost as estimated it would be a cheap investment for Washington. I would like, also, to say to the real-estate shylocks, who have been crying loud and long for sewer extension, and coupling this with every proposed reform in the sanitary affairs of Washington, and who have been fattening like vultures off of the misfortunes of Washington, to stand aside a little while and allow us to establish a filter plant. Then, if they wish a bond-sewer extension bill passed for the improvement of the city and their outlying farm lands, the medical profession will undoubtedly join with them in promoting any scheme which has for its object the sanitary welfare of the city of Washington.

DR. CHARLES SMART, DEPUTY SURGEON-GENERAL, U. S. A.

To speak of the water propagation of typhoid fever before a medical audience appears to me to be wholly unnecessary. During the past ten or fifteen years this subject has been discussed so freely by medical associations and in the journals that every medical man is familiar with it; and it has been taught so thoroughly in our medical schools that every medical student is competent to deal with it on examination for graduation. It is, in fact, so fully appreciated that we are prone to forget that the water supply is not responsible for all the typhoid cases in a community.

Typhoid fever cases may be imported from other localities. In the Army of the United States during the past seven years we have had an average annual typhoid death rate of 59 per 100,000. This is a high rate, and when we consider the care given to the purity of garrison water supplies, it might be used as an argument to show how little such care avails as a protective measure; but when we scan the cases closely we find that four fifths of them are imported. Last year we had 148 cases distributed among 49 military stations. Eighteen stations had only 1 case each, and 18 others had only 2 cases each, 36 of the 49 stations showing by the sporadic appearance of the cases that they were not due to any influence affecting the whole of the garrison. The infection was imported, and indeed this holds good in a number of instances in which the cases were more numerous. Fifteen cases at Fort Brady, Mich., and 10 cases at Jefferson Barracks, Mo., were contracted by troops while away from their stations at rifle-range practice.

Nor must we forget that when a case has appeared, by importation or otherwise, other cases may be developed by a more or less direct infection from alvine discharges or contact with soiled bed or body linen, moist or dry, particularly in city tenements, where it is difficult to have an efficient sanitary administration in the sick room. Even in army hospitals, hospital-corps nurses have at times fallen victims to sick-room infection during the convalescence of the patients in their charge.

Again, we may go further and say that cases are sometimes developed under certain conditions of dryness or moisture, and organic fermentation in the soil. We know that as lands become drained and the level of the subsoil water is lowered, malarial fevers give place to typhoid fever. Our fathers in medicine in this

country long ago observed that typhoid prevailed on the dry ridges, while malarial fevers infested the valleys between. In the army we have had several local outbreaks in barracks which had no cellars, but where the subfloor space, the space between the surface of the ground and the under surface of the flooring, was foul, damp, and unventilated, with the seams of the flooring so open that foul subsoil air was drafted into the building by the warmth of its interior.

Where the subsoil is contaminated by leaking cesspools and privy pits typhoid fever is common, even when the water supply is not derived from this contaminated ground. A well planned and constructed system of sewers is a great convenience to a community. It is also a work of the first importance in a sanitary point of view. The history of every sewered city shows a lessening of the typhoid death rate subsequent to the construction of the sewers, and the typhoid rate is always higher among the privy pits and saturated soils of the unsewered suburbs than in the sewered portions of a city. My friend, Dr. Kober, has shown this to be the case in this city of Washington. In a recent report the medical officer of health of Nottingham, England, tabulated his cases of typhoid fever during the past ten years according as they occurred in houses with privy pits, with pails or other modification of the dry-earth system, and with sewers. The result showed that typhoid prevailed in 1 of 37 houses with privies, 1 in 120 of those having the dry-earth system, and in only 1 in 558 of those connected with the sewers. How comes this? Sewers carry away the filth that would otherwise contaminate the soil; and the filth of former years becomes in time washed out and cleaned by rainfalls and the movement of the subsoil water to its outfall. The city of Munich is an excellent illustration of this. It was sewered for ten years before it became completely supplied with pure water, and during those ten years the typhoid death rate fell gradually from 100 to 200 per 100,000 to about 20. Since pure water was introduced the rate has fallen to 3 per 100,000.

To prevent typhoid fever two essentials are requisite—a clean soil and a pure water supply. We, in Washington, have neither of these. The towns in England have one of them—a pure water supply; and they have an average typhoid rate of about 17 per 100,000. With a pure water supply and soil conditions as at present, Washington should expect a lowering of the present rate to 17, the average of the towns in England. These English towns are surrounded by a suburban belt of unsewered settlements, where the soil is polluted by privy pits and cesspools. Nottingham, to which I referred a few moments ago, has a very large number of unsewerd houses. Manchester has so many that the municipal authorities found it necessary to substitute sifted ashes in pails for the more dangerous privy pits in the unsewered portions of the city. As Washington is not the only city which has unsewered surroundings, and as other cities having similar surroundings have lower death rates, its high typhoid rate cannot be laid upon them. In comparing our typhoid rate with those of other cities, we should look to differences, not to similarities. The difference between our sanitary condition and that of the English cities lies in the purity of their water supplies. They filter the water; we do not.

By filtering our Potomac supply we would have a death rate no higher than theirs, and by having the whole of our subsoil clean, by the extension of our sewerage system, our typhoid death rate would be reduced to the insignificant figure occasioned by imported cases, sickroom infection, and cases of doubtful *de novo* soil origin, 3 or 4 per 100,000.

Purification of public water supplies is a comparatively new thing with us. Europe is more than a generation in advance of us in this respect. Cisterns and reservoirs were first built in this country for storage purposes solely, and it was only after they had been used in this way for some time that the purifying influence of sedimentation and nitrification during storage was recognized. With few exceptions, however, our sedimenting basins do not sediment. Take the water supply of Washington as an instance. The water is dammed at the Great Falls, sixteen miles above the city, and led by a conduit to the Dalecarlia settling basin.

Thence it is continued in the conduit to the distributing reservoir. General Meigs built this system fifty years ago, at a time when the Dalecarlia basin was a natural pond, draining an unsettled upland region; but the villages of Tennallytown and Chevy Chase grew upon this drainage area, and the water became so contaminated that it was considered advisable to abandon the reservoir and lead the water from the Great Falls direct to the distributing reservoir.

As this latter basin holds only a supply for four days, or about 180,000,000 gallons, much complaint was made of the turbidity of the water. The reason why it was so turbid may be understood from an inspection of the conditions. Recently the Engineer Department has reclaimed and made use of the Dalecarlia Pond by intercepting and turning aside the local drainage, which is run through a tunnel into the Potomac. This gives about five days' additional supply and permits of a better sedimentation; but the purification by this means is not satisfactory.

Filtration offers the only practical means of satisfactory purification. In Europe sedimenting basins are used merely as a preliminary to filtration. The London water companies have over 100 filter beds, each one acre in extent, with settling basins for unfiltered water and reservoirs for filtered water, the sides of solid masonry and the floors of brick laid in hydraulic cement. The filtering media consist of layers of broken stone, screened gravel, and sand, the coarser materials at the bottom. The thickness varies in the filters of the different companies, but the sand always forms a considerable proportion of the whole, as it in fact constitutes the intercepting layer. The rate of filtration is about two gallons per square foot per hour, or 2,000,000 gallons per acre per day.

Since bacteriological methods have been brought to bear on the quality of filtered waters, this sand and gravel filtration has been proved to be all that could be desired. Constant supervision is exercised over the filtration, that it shall be uniform, and that the filtered water shall not contain more that a certain number of bacteria, 100 colonies to the cubic centimeter.

Filtration in this country is only in the experimental stage, although filters are in existence at some towns, as Poughkeepsie, Ilion, and Hudson, N. Y., and Lawrence, Mass. It is difficult to get at their cost, but the average cost in Europe is cited as about $1 per square foot for open filters with one-third added for roofing. This is equivalent to about $45,000 per acre (43,560 square feet), yielding 2,000,000 gallons daily, or, with the one-third for cover, $60,000; $30,000 for 1,000,000 imperial gallons; for 1,000,000 United States gallons, say $25,000; for the 40,000,000 gallons used daily in Washington, $1000,000.

One reason why municipal authorities in this country have not given serious attention to filtration through sand beds is probably because they have been in anticipation of some less expensive and more rapid method of purification—some method of mechanical filtration, as it is called. When I was in Memphis in 1879, I saw there a hotel filter, called the Newark filter, which gave a clear water from the reddish-brown clay water of Wolf River. It was merely a metal cylinder packed with coke and sand and connected with the water pipes. The head of water in the distributing reservoir forced the water rapidly through the sand, and the result was a water free from all turbidity, but the clay caked on the surface and choked the filter in a few hours. Now came the peculiarity of this filter. The pipes were so arranged that the current could be reversed, the sand shaken up, and the accumulated clay washed away. The filtration was so rapid and the filtering medium shaken up so frequently that sanitary men did not give it their confidence. In progress of time it was made in larger sizes. Its name bebecame changed several times, and greater efficiency was claimed on account of the use of a coagulant. Several towns in this country have established filtering plants of this general character, and the people are pleased with their clear water supply; but its bacteriological purity has not been demonstrated, and the typhoid rates of those cities do not compare favorably with the rates of cities having natural or sand filtration.

In conclusion, Mr. Chairman, I agree

with the committee of this society that the city of Washington should have its Potomac River supply filtered, and filtered by the best means known to scientific and practical men, i. e., by natural or slow filtration through beds of gravel and sand.

Dr. Kober said: In view of Dr. Smart's explanation of the construction and arrangement of the Dalecarlia and the distributing reservoir, it is interesting to note that our highest typhoid fever death rate was in 1890, the rate being 89.5 per 100.000. In this connection it should be remembered that the typhoid fever epidemic at Cumberland occurred between December, 1889, and April, 1890, and was followed by a very large increase in our typhoid fever rate; moreover, from October 4, 1889, to March 18, 1890, the distributing reservoir was out of service, so that during a certain period of the epidemic the water was simply permitted to pass into the Dalecarlia reservoir, from which it was distributed to the city without much, if any, opportunity for sedimentation. The effects of this are markedly shown in my Table No. 3.

The excessive death rate from malarial fevers in the city during the past twenty years has furnished just reasons for the suspicion that many of these deaths, like those reported as typhomalarial, were really due to typhoid fever. In my experience, a great many of the cases of typhoid fever occurring in the southeast and northeast had been suffering for several weeks prior to the attack from malarial intoxication, and I can readily understand how those who are not familiar with modern methods in diagnosis would be led to believe in a primary malarial infection that in a few weeks would assume typhoidal symptoms and report such cases as deaths from typhomalarial or remittent fevers. From my own observations I simply regard malaria as a predisposing factor to a typhoid fever infection, because of the lowered vitality which malaria produces.

Dr. Kober said it would be interesting to hear from Dr. Woodward the results of the discontinuance of box privies and the effects of compulsory sewer connections in certain sections of the city.

Dr. Woodward said: In a general way the subject under discussion has been so thoroughly gone over that there is no occasion for further remarks; and practically the same may be said of the discussion so far as it relates to local conditions. One question has been raised, however, which is of some interest and importance, and upon which I can possibly throw some light; that is, as to the relations which exist between the diminished typhoid fever death rates at various sections of the District, and the abandonment of box privies and surface drainage in them. I have not personally studied the recent diminution in our typhoid fever mortality with reference to locality, but it has been stated in the course of this discussion that the greatest improvement appears in th southwestern and southeastern sections of the city.

If this be the case, it is exactly what we would expect to find if such improvements were due to improved drainage, for of the entire number of enforced sewer connections which have been made, between 1,000 and 1,200, almost half have been made in these two sections of the city, and this notwithstanding their comparatively limited area and population. Even, however, if these two circumstances bear the relation of cause and effect, their coincidence does not prove that other causes have not been operative, and quite as likely as not, the abandonment of surface wells, better milk supply, improved sanitary conditions generally, and, possibly, such sedimentation as is accomplished by the Dalecarlia reservoir, are all factors in this result.

A word as to nomenclature of the diseases which have entered into the present discussion. The term "typhomalarial fever" is retained in the mortality tables of the health department so as to permit those who believe in its existence to add necessary data in reference to it. Those who regard typhoid fever and so-called "typhomalarial" fever as one disease can readily add the number of deaths reported as due to both causes when they desire to ascertain the typhoid fever death rate. This is the method now employed at the health department, though fotmerly only such deaths as were re-

ported as due to typhoid fever were used in making such calculations. By either of these methods of calculation our typhoid fever mortality is excessive; but if, in computing it, we shall regare all or nearly all of our deaths reported as due to malarial fever, as having been caused, in fact, by typhoid fever, as we would apparently be justified in doing, the result would be appalling, and the death rate so obtained probably equal, even if it did not exceed, corresponding figures for any other city on this continent.

In making comparisons of vital statistics, we must bear in mind that those of the District of Columbia can not be properly set opposite those of any State or Territory, as appeared to have been done in the statistics given by Dr. Johnston, because of the differences in the character of the population, occupations, and other essential factors. The District is essentially a city; its strictly rural population is almost nil. Comparisons, to be fair, must therefore be between it and other cities similarly situated, as, for instance, Philadelphia or Chicago, which have large settlements of a suburban character within city limits. Another factor to be considered as an element in the typhoid fever mortality is the proportion of the population which is made up of colored people. In the District of Columbia this amounts to approximately one third. During the past twenty years the typhoid fever death rate for the colored race has been, with the exception of two years, higher than that of the whites.

Dr. Smart said: I would like to say a word or two about the prevalence and the mortality from malarial fevers in the army, that it may go on record as compared with the deaths from malarial fever as reported in the city of Washington. During the war the soldiers of the United States were greatly exposed to malarial influences, and the death rate was 3 per 1,000. Since war times the typhoid death rate from malarial fevers has dropped down to small figures, notwithstanding the fact that the troops are stationed all over the West; that they are exposed to malarial influences every time they leave their post on active service. They have, when they go into the field, to camp near water, and it most frequently happens that where they find water the find malarial influences to contend with. As a consequence, they bring back malarial fever to the post, but there is not a large death rate.

Some time ago I had the figures cast up for quite a number of years back, and the average annual death rate from malarial disease was 6 per 100,000 of enlisted men. But the malarial rate of Washington City is very much higher than that. Many cases of typhoid fever must of necessity have been regarded as cases of remittent fever. This happened in the army statistics very frequently. An epidemic occurs during the course of the autumn, and if no one dies the disease is stated as malarial or remittent fever; but if a case proves fatal and the autopsy shows Peyers patches thickened and enlarged, the case is reported as typhoid fever, and all the previous cases have the diagnosis changed to typhoid fever. Where death occurs from malarial disease at our military posts it is really due to remittent fever, so that the rate of 5.9 in 100,000 may be considered as properly representing the death rate from this disease and not including any typhoid cases.

MEETING OF MARCH 2, 1898.

The President, Dr. S. C. BUSEY, in the Chair.

SANITARY DAIRY.

The following report was made:

The committee appointed to supervise the establishment of a sanitary dairy beg leave to submit the following report—

The necessity for an improved milk supply has been repeatedly emphasized in this Society. The reports of the Health Officer of this and other cities plainly show the gross frauds which are daily perpetrated upon the public as regards removal of cream, or the addition of water, and certainly indicate the desirability of stringeut laws governing the milk traffic as a protection to the pocket of the consumer; but when we remem-

ber that Drs. Busey and Kober have collected and tabulated 138 epidemics of typhoid fever, 74 of scarlet fever and 28 of diphtheria, not to mention the countless deaths from cholera-infantum, and that an analysis of the evidence showed that the virus of these diseases may reach the milk by soakage of the germs into the well water with which the utensils are washed, or by the intentional dilution with infected water; that the infection can be conveyed by animals wading in sewage-polluted water, or by the dairy employes acting as nurses or suffering themselves from some mild infection while continuing their usual duties, or are convalescent from the disease; and that infection has taken place through the agency of scrubbing brushes, flies, exposure of the milk in or near the sick rooms, or washing patients with the same cloth used in wiping the dairy utensils, we see at once that dairies should be under searching control to prevent the propagation of disease by infected milk. So far legislation has failed to accomplish the desired end, and with a view of reducing the dangers to a minimum, a gentleman has undertaken the establishment of a so-called Milk Laboratory in this city.

The milk is obtained from a farm located on a commanding and healthful site just south of Brightwood. The farm is supplied with Potomac water in order to obtain an abundant supply for absolute cleanliness of the stables, drainage, etc. The stable is entirely new, affords ample air space, lighting and ventilation, and is provided with a cemented floor.

The cows have been subjected to a critical examination, including the tuberculin test, and have been pronounced absolutely free from disease by the District Veterinarian; they are fed according to standard rations recommended by the Department of Agriculture.

Before milking the stables are cleaned, the animals groomed and their teats and udders washed, they are then taken into the milking room supplied with a cemented floor, where the milking is done in a dust-free atmosphere, into absolutely clean utensils.

The requirements of cleanliness apply with equal force to the person and clothing of the dairymen.

The milk is then taken into another room where it is passed through a separator, properly aereated and cooled rapidly to a temperature below 50°, in which condition it is delivered within two hours at the city laboratory, located at No. 1120 18th street, N. W.

The laboratory is supplied with a cemented floor and enameled walls, which are kept wet to prevent any contamination from dust, while the milk is being bottled. The room is properly ventilated and the air which enters is filtered through cotton plugs placed in the ventilating ducts.

The milk bottles are washed in filtered, boiling water and finally sterilized by means of steam. The milk after being tested as to purity and richness is bottled, and kept at a temperature below 45° until delivered to the consumer. Milk of this character and containing not less than 4 per cent. of butter-fat is sold at 10 cents per quart, which considering its nutritive value is no more expensive than ordinary milk containing a less per centage of fat. The percentage of fat in this sanitary milk varies from 4 4-10–5 per cent.; 3 per cent. is the legal standard in the District.

The cream will not rise at the temperature at which the milk has been kept, i. e. below 50°, and in order to determine its richness without analysis it must be allowed to stand for 8 hours at a temperature of about 70°.

The results of the bacteriological ex-

amination conducted by Dr. DeSchweinitz have so far been very gratifying.—When it is remembered that the number of bacteria found heretofore in milk, even from properly conducted dairies, varied from 15—20,000 per c.c. and that as many as 7.000,000 per c.c. have been found, the fact that only 1400-2000 per c.c. were found in the sanitary milk from this laboratory, speaks volumes for the rigid system of cleanliness observed by all engaged in the manipulation of the milk.

It is scarcely necessary to point out the fact, that milk no matter how great the precautions have been taken is never absolutely free from bacteria; Dr. V. A. Moore of the Department of Agriculture, in a paper based upon agricultural investigations and read before this society May 13th 1896, demonstrated that the number of bacteria in freshly drawn milk varied from a few dozen to many thousands per c.c. and that it is the exception to find a sample of milk that is free from micro-organisms, unless it is taken during the latter part of the milking process from a single quarter of the udder; and he very justly concludes, that the bacteria invade the milk ducts and multiply there after each milking and thus necessarily contaminate milk subsequently drawn.

The character of these organisms is of course of greater interest so far as the public health is concerned, and while with all the safeguards used in the production of sanitary milk, we may hope to reduce the danger to a minimum, yet with the milk intended for the use of infants, sick and invalids we feel constrained to recommend as an additional precaution the employment of Pasteurized milk, first because Dr. Moore and others have shown, that sugar fermenting bacteria are invariably present in freshly drawn milk, regardless of the cleanliness of the stable, milking utensils and general surroundings, and second because it has been shown, that a small percentage (about 2 per cent) of healthy looking cows may not react to the tuberculin test, but still be suffering from incipient tuberculosis.

In persons therefore whose digestive system cannot be depended upon for the destruction of these organisms, the employment of Pasteurized milk or cream seems specially indicated.

Pasteurization is accomplished by means of a special steam apparatus, subjecting the milk or cream to a temperature between 158°–169° F., for a sufficient length of time to secure the destruction of micro-organisms. The milk or cream after rapid cooling is placed in sterilized bottles, sealed, and kept at a temperature below 50° until delivered to the consumer.

The bacteriological examination thus far shows this milk to be entirely free from germs.

Pasteurized milk and cream are put up in pint and ½ pint bottles, and in order to insure best possible results, all milk delivered from this Laboratory should be kept in a cool place until used.

The Committee will continue its labors, and Dr. De Schweinitz has begun a series of bacteriological investigations, comparing the milk from the Laboratory with milk purchased at random, the results of which will be placed before the Society in due time.

In conclusion we desire to express our approval of an enterprise, which renders the production of a milk free from impurities and disease germs possible, and which at the same time contains from 25–50 per cent more fat than the legal standard demands.

GEORGE M. KOBER, M. D.
E. A. DE SCHWEINITZ, M. D.
SAMUEL S. ADAMS, M. D.
Committee.

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THE
NATIONAL MEDICAL REVIEW.

VOL. VIII. WASHINGTON, D. C., SEPTEMBER, 1898. No. 4.

Original Articles.

CASE OF DIFFICULT LABOR.

BY E. A. BALLOCH, M. D.,
Washington, D. C.

I have to report the case of Mrs. F., aet, 23, primipara; last menstruation May 27, 1897; estimated date of confinement February 20, 1898. This date having come and gone without any signs of approaching confinement, more careful inquiry was made when it was found that her entire menstrual life had been more or less irregular, she having often gone as long as three months without her flow with no apparent detriment to her health. I saw her every week until her confinement, and as she continued in perfect health it was concluded that she had made a mistake in the date of her last menstruation.

On the morning of April 8, 1898, I was sent for and found that upon awakening she had discovered her night-dress wet by the escape of the waters. There was no pain. Examination showed no dilatation. Soon after she began having, at long intervals, slight and transient pains of no force, but accompanied by a profuse discharge of amniotic fluid. Between the pains there was constant oozing of water. This state of things kept up all day, the os having in the meantime dilated enough to permit the diagnosis of breech presentation. She passed the night of the 7th without any pains, but with constant slow escape of the waters. The same conditions continued during the morning of the 8th, but in the afternoon there were a few sharp pains as the result of a ten-grain dose of quinine given as an experiment. Her physicial condition up to this time had been excellent, but during the evening of the 8th she began to get restless and uneasy, and the pulse became somewhat more rapid. The os by this time was three inches in diameter and what pains she had were weak and ineffectual. Foreseeing that labor was likely to be difficult and not likely to terminate without assistance, further advice was requested by me and Dr. Thomas C. Smith was good enough to see the case with me. His advice was to try to bring down a foot and deliver in that manner. The patient was according etherized and the attempt made. A finger could readily be hooked into the groin but prolonged and vigorous traction, with as much force as we dared apply, was absolutely without effect so far as moving the child in any way was concerned. The walls of the uterus, deprived of the buffer ordinarily presented

by the amniotic sac, closed about the child with a vise-like grip which no safe amount of force could loosen. Examination at this time showed no signs of life in the child and it was accordingly deemed best to lessen the size of the fœtus by evisceration. Even after this maneuver extraction was by no means easy but, finally, after three hours of hard work on our part she was delivered of a hemicephalous monster, weighing nearly twelve pounds.

The patient, by this time, as may be imagined, was in an exceedingly critical condition, the pulse being weak and very rapid and exhaustion extreme. Under treatment, consisting mainly in large doses of strychnia, subcutaneously, she rallied and her convalescence, while somewhat prolonged, was marked by no untoward events. The use of the catheter was necessary for ten days. It was noticed that the daily washing of the vagina would occasionally bring away moderately large pieces of its lining membrane.

About a month after my attendance upon her had ceased I had occasion to call upon her and upon asking her condition she replied that she felt as well as she ever did in her life. After a little hesitation, however, she asked if there ought to be any hindrance to connection. Upon my replying in the negative she said that there seemed to be a ring or some other obstruction in the vagina. Examination showed her diagnosis to be correct, for just below the cervix the vagina is narrowed by an annular constriction the opening in which will admit the tip of one finger only and which will necessitate operative interference for its relief. Menstruation has since appeared and is normally performed. The above narrated case presents the following points for consideration:

1. The possibility of prolonged gestation. The size and general development of the child indicated that such might be the case. Accepting as correct the dates furnished by the patient gestation continued over 300 days. In view of the irregular menstrual history, however, the case lacks the elements of accuracy essential to a scientific demonstration of this point.

2. The use of quinine as an oxytoxic. The writer has always been skeptical as to the alleged benefits of quinine in stimulating uterine contractions and its use in this case was in the nature of an experiment. Whether *post hoc* or *propter hoc* its administration was followed by sharp pains extending over a period of one and one-half hours. Before and after this period the pains were weak, irregular and without effect.

3. The effect upon labor of the premature escape of the waters. So-called "dry labor" is ordinarily thought to be harmless except for its tediousness. In a recent paper* Dr. George Livingston Brodhead combats this view and contends that the early rupture of the fœtal sac is fraught with danger to both mother and child, especially in breech cases. The danger to the child is in the liability of its death from meningeal hemorrhage or asphyxia. The mother's life is endangered by lacerations of the soft parts, pressure necrosis and even rupture of the uterus as a result of the prolonged and severe manipulations necessary to delivery. The case here reported tends to confirm these views. In his service at the Sloane Maternity, Dr. Brodhead noted that in fifteen per cent. of his cases the membrane ruptured either before or with the first labor pain.

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* Medical Record, vol. 53, No. 20, p. 685.

4. The choice of operations in cases of difficult labor. The usual procedure in cases of difficult labor, not arising from deformities of the pelvis, is to terminate labor by extracting the child through the vagina. The usual results of this course are lacerations of different parts of the birth-canal. In the present instance could the difficulties of this method of delivery have been foreseen I believe that both the consultant and myself would have elected the Cæsarian operation. As for myself I am firmly convinced that there would have been much less shock to the mother; that embryotomy would have been avoided; that labor would have been sooner terminated and finally that there would have been no after-effects in the shape of a constricted vagina to deal with had such a course been pursued. It seems to me to be altogether a more rational procedure and with the present surgical tendencies of the profession I believe that the weight of opinion will sooner or later be in favor of the abdominal operation.

5. It may be pertinent to recall the fact that anencephalous cases are prone to present by the breech or transversely. As to the cause of the deformity in this case I am in the dark. Careful inquiry into the family history on both sides throws no light on the case. The child was robust and healthy in every way except for the defect in the head.

APARTMENT DISINFECTION WITH FORMALDEHYDE.

By Jacob R. Johns, M. D.,
Philadelphia, Pa.

The difficulty attending the application of formic aldhehyde gas to general disinfection, has led to the devising of a score or more of lamps and generators to meet the indications. Many of these, because utterly devoid of merit, have never come into prominence, while others, which possess some value and a more or less restricted field of usefulness are quite well known. The difficulty appears in liberating the gas in its most active form in sufficient volume and with sufficient rapidity to overcome all unavoidable loss through hole and crevice and that resulting from polymerization of the free gas.

Three methods requiring different apparatus are in vogue. In the first and oldest the gas is generated directly from wood alcohol upon the principle of retarded combustion; in the second the gas is liberated from an aqueous solution of known strength, and in the third it is dispelled from pastilles of para-formaldehyde by exposure over a flame. In the first and second the apparatus must be confined in the closed apartment which is being disinfected, where it is always a source of danger and great uncertainty of action. If lamps burning wood alcohol are used the operator can never know what per cent. of alcohol is completely consumed and what is changed to available formaldehyde gas. The volume of gas generated is always uncertain and never large even when operated by an experienced chemist. In the effort to obtain large volumes of gas during the same period of exposure the second and third methods have been devised.

In the third method the formation of polymers led Trillat and others to devise a means for generating the gas under pressure. This requires an extremely bulky apparatus and introduces a new element of danger, that from explosion. The latter element and the fact that

polymers are formed led to the employment of the polymerized product in pastilles which, while it gives better satisfaction than is obtained from alcohol lamps, affords no gain in either the volume of gas or the rapidity of elimination.

Another method intended to overcome all the foregoing difficulties is that used in the apparatus here shown.* The method is both simple and novel. The apparatus consists of a shallow copper chamber, placed over a Swiss heating lamp and beneath a receiver in which is placed commercial formaldehyde, an aqueous solution containing 40 per cent. of formic aldehyde gas, and about 10 per cent. of methyl alcohol — the latter being added to make the solution permanent. A small valve protects the opening from the receiver into the chamber. When the latter is red hot the valve is opened to admit a small stream of the formaldehyde solution into the chamber. Instantly it is vaporized and the vapor containing the free gas is heated to a very high temperature as it passes through the chamber and a short hose through the key-hole, or other suitable opening, into the room to be disinfected. The apparatus is always on the outside of the apartment being disinfected, and under constant observation. The formation of polymers is absolutely prevented and there is no danger from explosion since the gas is not generated under pressure. It is especially adapted to apartment disinfection; but is the most economic apparatus for filling special or improvised chambers, as in the sterilization of gauzes and other surgical dressings on a large scale. With one of these apparatuses one man can easily disinfect upwards of twenty apartments per day.

*This method was introduced by the Sanitary Construction Co., of New York City, and the apparatus is now being introduced by H. K. Mulford Co., of this city.

Trichinosis.

There is a marked increase in the percentage of eosinophiles in the blood in trichinosis. The increase may render service as a diagnostic sign of the disease. The disease, in its sporadid form, is more common than has hitherto been supposed. This is shown by the discovery of three cases within a comparatively short period at the Johns Hopkins Hospital. A systematic examination of the blood should be undertaken in all cases with indefinite intestinal, muscular, or articular symptoms, in the hope of establishing a diagnosis of trichinosis. Brown (Thos. R.)—Studies on trichinosis, with special reference to the increase of the eosinophilic cells in the blood and muscles, the origin of these cells and their diagnostic importance. J. Exper. Med., 1898, iii, 315.

Parasites of Malarial Fever.

Dr. Ziemann (Centralblatt für Bakteriologie, Abth. i., Bd. xx., Nos. 18, 19) gives the results of his observations on the blood of fourteen persons suffering from agues of home origin and of seventy with acute and fifteen with latent forms of tropical remittents contracted in the Cameroons. The details of the growth of the amœboid forms appearing in the red blood corpuscles at the commencement of the hot stage, undergoing pigmentation and nucleolation, and finally, toward the end of the cold stage, sporulation by fission into two or ten or even sixteen separated nucleated cells or resting spores, is clear and interesting. He could neither verify nor refute, though he was inclined to doubt, Golgi's statement that tertian and quartan agues were marked by different forms of the parasite, nor Mannaberg's as to the quotidian and tertian; for his German cases were tertian only, and his African quotidian or irregular. Med. Rec., N. Y. 1898, LIV. 160.

THE NATIONAL MEDICAL REVIEW.

EDITED BY

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AND

THE MILITARY SURGEON,

A SUPPLEMENT,

UNDER THE CHARGE OF

Colonel WILLIAM H. FORWOOD, Assistant Surgeon-General U. S. Army.

OFFICE: 1437 L Street, N. W.

WASHINGTON, D. C., SEPTEMBER, 1898.

Notices and Reviews.

THE TREATMENT OF CHOLERAIC DIARRHŒA. Lambert Pharmacal Co. St. Louis. 1898.

This brochure contains a number of instructive articles on the summer diarrhœas of infants and children. The authors live in different parts of the country and have that familiarity with the difficulties to be overcome in the treatment of the diseases under consideration which can only be gained by clinical observation and experience. Any of our readers who may be sufficiently interested to apply, will be supplied gratis with a cloth bound copy.

THE OFFICE TREATMENT OF HEMORRHOIDS, FISTULA, ETC. By Charles B. Kelsey, M. D. E. R. Pelton. New York. 1898.

In presenting the three lectures contained in this little book, the author contends that he has done, what is in his power to counteract the far too prevalent idea in the medical profession, that the only radical treatment of these affections is by operation. These lectures make very interesting reading, but they are after the manner of a lawyer's plea rather than a teacher's dictum. They do not teach anything in fact, except the lesson that you must learn in some good book or from some good man the method of curing piles without using a knife or clamp or general anæsthetic.

ATLAS OF SYPHILIS AND THE VENEREAL DISEASES. By Prof. Dr. Franz Mracek. Philadelphia. W. B. Saunders. 1898. Price $3.50 net.

This book is one of the authorized translations into English of the world-famous Lehmann medicinische Handatlanten which for scientific accuracy, pictorial beauty, compactness and cheapness surpass any similar volumes ever published. The author has most certainly succeeded in his endeavor to produce a book within the reach of a wide circle of readers. To carry out this plan he has selected those diseases which are of most frequent occurrence and greatest practical importance. His ward in the K. K. Rudolfsspital in Vienna furnishes him with a vast amount of clinical material from which he has chosen the best to illustrate this work. Thoroughness according to Dr. Bolton Bangs, the American editor, has always been granted as one of the chief attributes of German teachers. The present volume, in his opinion, shows another trait no less characteristic, but which is perhaps not so generally conceded. It is a certain strong practical sense in selecting the material and presenting it in the form best fitted to the needs of those for whom it is intended. In speaking of the hypodermatic

use of the salicylate of mercury and other insoluble mercurial preparations, Dr. Mracek says they should be avoided, as a rule, for they all have the disadvantage that the amount of mercury absorbed remains an unknown quantity and grave accidents sometimes occur.

ATLAS AND EPITOME OF OPERATIVE SURGERY. By Dr. Otto Luckerkandl. Philadelphia. W. B. Saunders. 1898. Price $3 net.

When we take into consideration the fact that this volume together with all the others of this series of hand-atlases, has already appeared in nine different languages we can form some idea of its success. This epitome of operative surgery is intended by the author as an elementary work for students in this subject. So thoroughly accurate and complete is the method employed that we take the greatest pleasure in urging every student to procure this volume before entering upon the study of surgery next session. In this work the student will find those groups of op rations whose practice upon the cadaver forms the basis of practical instruction described in detail and illu-trated in their most conspicuous aspects. Other operations, whose performance falls largely on the lot of the skilled surgeon, and whose practice upon the cadaver appears much less important, are described concisely. The aim of the translator has been to portray the spirit rather than the exact words of the author. The American editor, Dr. J. Chalmers Da Costa, has added a few notes that are explanatory in their nature.

A MANUAL OF MODERN SURGERY. By John Chalmers Da Costa, M. D. Philadelphia. W. B. Saunders. 1898. Cloth, $4 net.

That a second edition has been called for in less than four years must prove a source of great gratification to the author and the publisher of this really valuable book. In the preface to the first edition published in October, 1894, Dr. Da Costa writes that the aim of his work is to present in clear terms and in concise form the fundamental principles, the chief operations, and the accepted methods of modern surgery. His manual seeks in a word, to stand between the complete but cumbrous textbook and the incomplete but concentrated compend. In the new edition, he says: no attempt has been made to alter the character or to change the purpose of the book, although it has been practically rewritten, many entirely new articles added, and a majority of the old articles enlarged, restricted or otherwise altered. The making of definitions that properly define, that make a clear picture instead of further obscuring an imperfect conception, is one of the most difficult parts of any science. In this work inflammation is defined as a nutritive disturbance arising from tissue-damage, and is not an increase of nutrition. A little further on we have healthy inflamation, when the tendency is to repair and unhealthy inflamation, when the tendency is to destruction. Repair is said to be an active process by which destroyed tissues are replaced, and it is due to increased nutritive activity rather than to inflammation. Inflammation may occur or we may be obliged to induce it when the blood supply is scanty or the exudation deficient, suppuration is noted as a process by which tissue and inflammation exudates are liquified by the actions of pyogenic organisms, and it is a common termination of infective inflamation. Tubercular disease of the male or female genitalia receives no mention whatever. Writing of gunshot wounds he notes the difference in the effects produced by the new and old arms, comparing more especially the Springfield and the Männlicher rifles in their velocity, carrying distance and resultant wounds. In the operative treatment of internal hemorrhoids, Dr. Da Costa thinks the application of the ligature is the easiest and most generally useful method. Whitehead's operation, he thinks, is suited to severe cases and only a surgeon who can master violent hemorrhage should venture to perform it. In sarcoma of the mammary gland the author advises removal of the breast and if the muscles of the chest wall are infiltrated remove them. The axillary glands are removed if they are enlarged, but not otherwise. Although it is difficult to agree with the writer's views in every case, yet the book is eminently a safe one to place in the hands of students.

Progress of Medicine.

GENERAL MEDICINE AND SURGERY.

Atropin in Hyperchlorhydria.--Plesianu.

The writer recommends the use of atropin in hyperchlorhydria. He groups together the symptoms of which hyperchlorhydria is the most marked, consisting in hyper-secretion, plain, pyloric spasm, and stasis. The alkaloid of belladonna is expressly indicated in these conditions, for it possesses the property of suppressing secretions, of blunting sensibility and relaxing the muscular spasm of involuntary muscles. The theoretical considerations are fully borne out by observations in the employment of belladonna in cases of hyperchlorhydria. In every case the pain was relieved : in one patient the pain never returned ; another obtained greater relief than from the use of alkalis. In every case there was an amelioration of the excessive secretion of HCl. The motility, as determined by the oil method of Mathieu, became more nearly normal. The atropin is given, preferably in the form of a solution, as follows : Sulphate of atropin, 0.01 ; distilled water, 10.0. Of this solution, 10 drops are given daily. As soon as tolerance is obtained, the dose is increased to 15 and then to 20 drops per day. The dose is finally increased, by gradual additions, to 40 and even 50 drops per day, after which it is gradually decreased. Care is of course to be observed, and with the appearance of the first sign of danger, the dose is reduced or the drug stopped altogether. Plesianu. Presse méd., Par., 1898, i, 179.

Lumbar Puncture in the Diagnosis of Tubercular Meningitis.--Schwarz.

Schwarz calls attention to the fact that the differences of opinion concerning the possibility of finding tubercle bacilli in the fluid obtained by lumbar puncture, are not as marked as at first supposed. He, himself, has found the bacilli in 16 out of 22 cases examined. Schwarz. Zur klinischen Wurdigung der Diagnose der tuberculösen Meningitis vermittels der Lumbal Punction. Deutsch. Archiv. f. klin. Med., Bd. lx, Heft 2 and 3.

Examinations of the Blood in Diseases of the Stomach.--Jez.

As the result of a long series of painstaking investigations, the author concludes that, from the point of view of differential diagnosis, we have no practical or certain means of distinguishing between benign and malignant diseases of the stomach, from an examination of the blood. The presence of digestive leucocytosis points to the existence of a benign condition, while the appearance of nucleated red blood cells might indicate carcinoma. The blood examination is valuable as a sign of the direction in which further research is indicated, and, with other clinical data, may permit of the formation of a more accurate diagnosis. Jez. (V.) Ueber die Blutuntersuchung bei Magenkrankheiten, besonders bei Ulcus Rotundum und Carcinoma Ventriculi. Wien. med. Wchnschr., 1898, lxviii, 694.

The Composition of the Urine and the Renal Function.--Lépine.

The author attempted to modify the renal permeability in dogs by 1, section of the renal nerves ; 2, by exercising pressure on the urinary tubules by the introduction of sterilized water through the ureters, and 3, by toxic and medicinal action. He arrives at the following conclusions : The proportion of the different elements of the urine is profoundly modified when the function of the kidney is disturbed. There is an antagonism between the excretion of urea and the salts, especially the chlorides, also between the chlorides and phosphates. One can say in general that each substance has its own coefficient of passage through the kidneys, and that coefficient varies enormously, depending upon the condition in which the kidney finds itself. A kidney permeable for methylene blue may not be so for other substances. Therefore, the occurrence of uremia in cases where the kidneys are permeable for the above dye need not cause astonishment. Lépine. Lyons méd., 1898, lxxxvii, 573.

CLINICAL DIAGNOSIS.

UNDER THE CHARGE OF
CHARLES E. SIMON, M. D.,
AND
ANDREW STEWART, PH. D.

Clinical Study of the Specific Gravity of the Blood.

Probably one cannot now claim anything new or original in the study of the specific gravity of the blood, but its accuracy and simplicity, and the small cost of the instruments necessary, are such as to commend it especially to the general practitioner as a method for estimating the percentage of hemoglobin.

The Fleischl hemometer is quite expensive; its use requires some practice on the part of the operator, and also the ability to detect slight differences in color; it is not convenient for bedside-work because of the need of a small, dark chamber to get the most accurate readings;* and by all writers upon hematology it is said to be liable to errors of from 5 to 10 per cent, even, in experienced hands. Gowers' hemometer is cheaper, but experience seemed to demonstrate it to be less reliable than Fleischl's. The tube of colored gelatin, which was furnished as the standard, was found to fade after a time, and thus to give fictitiously high readings to the blood that was compared with the gelatin. Hayem's instrument for hemoglobin-estimation has been little used outside of France.

On the other hand, the specific gravity method seems to do away with the various objections mentioned. This subject has been studied by many different men, but the principal methods for determining it are Roy's, Landois', and Hammerschlag's. Roy's method requires a series of test-tubes, holding a mixture of glycerin and water in differing proportions, so that the specific gravity of these shall range from 1040 to 1080. A drop of blood is then drawn into a capillary tube of glass, and gently introduced into the middle of the mixture in that one of the test-tubes with whose specific gravity it is thought most likely to correspond. There the blood will rise or sink according to the density of the glycerin-mixture, and successive trials are made until a fluid is found in which the blood remains suspended. The density of this fluid is then that of the blood. Landois' method is only a modification of Roy's, employing solutions of sodium sulphate, instead of glycerin. Hammerschlag's method is also a modification of Roy's, but one that can be employed much more rapidly and conviently. A mixture of chloroform and benzol, two liquids of widely different specific gravity and freely miscible, is put into a glass tube, and the drop of blood is gently introduced into the mixture. If the blood rises, the liquid is too dense, and benzol must be added. If it falls, the liquid is too light, and chloroform must be added. After each addition, the two liquids must be thoroughly commingled, and when the blood floats indifferently, the specific gravity is taken with the ordinary urinometer. The chloroform-benzol mixture can be filtered, and used over, again and again. The whole process occupies only a few minutes. Its great practical value lies in the fact that there is a definite relation between the specific gravity and the hemoglobin of the blood. Siegl and Schmaltz found that the specific gravity varies with the proportion of hemoglobin, but not with the total number of cellular elements, and this has been confirmed by Lloyd Jones, and by Hammerschlag. In 1880, Hammerschlag, after comparing the specific gravity with the hemoglobin-percentage in a series of cases, prepared a table, giving the different percentage of hemoglobin for the different degrees of specific gravity. Dr. R. C. Cabot says

*A dark room is unnecessary. His most accurate readings can be made at the bedside by employing the box described in the National Medical Review, 1897–'98, vii, 223. Ed.

that the specific gravity of the blood-plasma varies very little (except in cases of dropsy from any cause,) and in the corpuscles themselves the variable element is the hemoglobin. He is very much in favor of Hammerschlag's method, pronouncing it, when compared with Fleischl's, "cheaper, easier, more accurate, and equally quick," and adding that the table already given must not be accepted as absolutely accurate, and that further research will be needed to make it so. Following this suggestion, I have endeavored to prove the accuracy of Hammerschlag's table in the laboratory-work of the Clifton Springs Sanitarium. The instruments used were a test-tube 25 mm. in diameter, with a base; an ordinary urinometer; a bottle each of chloroform and benzol; a small lance or needle, and a capillary glass tube, *i. e.*, the white-corpuscle pipet of the Thoma-Zeiss blood-counting outfit (an ordinary medicine-dropper may take its place.) The test-tube is filled two-thirds full of such a mixture of chloroform and benzol that the specific gravity shall be between 1056 and 1060. The tip of the ear or finger is cleansed with ether, is pricked freely, a drop of blood is drawn into the pipet and is gently blown out again into the middle of the mixture. Then the liquids are added as needed, until the blood floats. The fluids must be thoroughly mingled, but the drop must not be broken. With this apparatus, and the Fleischl hemometer, I have made comparative tests in over 300 cases.

Pure benzol was used. Over 100 cases were tested with the benzol-chloroform mixture, and the results were rather more constant than with benzine or gasoline, which had been previously tried, but almost always the specific gravity was from 2 to 3 points higher than the records of Hammerschlag.

Although a large number of patients are examined at the laboratory, the usual range of hemoglobin, excepting in the very anemic cases, is from 65 to 100 per cent. according to the Fleischl instrument, observing all precautions mentioned by the different authorities. The following tables show the comparison between Hammerschlag's work, and the results obtained in this study:

Hammerschlag's.		Lichty.	
Spec. gravity.	Hemoglobin. Per cent.	Spec. gravity.	Hemoglobin. Per cent.
1033—1035,	25—30	1035—1038,	25—30
1035—1038,	30—35	1038—1043,	30—40
1038—4040,	35—40	1043—1045,	40—45
1040—1045,	40—45	1045—1047,	45—50
1045—1048,	45—55	1047—1049,	50—55
1048—1050,	55—65	1049—1052,	55—65
1053—1053,	65—70	1052—1054,	65—70
1053—1055,	70—75	1054—1056,	70—75
1055—1057,	75—85	1056—1060,	75—85
1057—1060,	85—95	1060—1063,	85—95
		1063—1065,	95—100

Candor compels me to say that the results obtained were sometimes quite different from the usual ratio, and I believe the errors lie with the Fleischl, rather than with the specific gravity method. Repeated examinations of the same patient's blood, at the same hour, on different days, gave exactly the same specific gravity, but not always exactly the same homoglobin-reading. In all but 2 or 3 of my cases, the count of the corpuscles was also made, and the specific gravity did not seem to depend upon the number of corpuscles. There were no children among the cases. The figures between 25 and 40 per cent. were computed by proportion, as no cases in which the Fleischl instrument gave a reading between those extremes were found during this study. The following precautions must be strictly observed in this method:

1. The glass tube must be scrupulously clean. Any particles of lint or dirt in the liquid are likely to adhere to the drop of blood, and so change the result. The pipet, or dropper, also should be cleansed each time with water, alcohol, and ether, so as to have it dry.

2. The blood-drop should contain no air, as that would give a false result. The pipet, or medicine-dropper, should be withdrawn before the last bit of blood has been blown out, or air will also be forced out.

3. The chloroform and benzol are to be added a few drops at a time. The two liquids should be thoroughly mixed. Repeated gentle inverting of the tube, tightly closed with the hand, has seemed to me better than stirring with a glass rod. The motion must be gentle or the globule of blood will be broken. Cabot

advises using a glass rod, but quite frequently the globule was broken in my use of it.

4. A little chloroform should be poured into the liquid before introducing the blood. This immediately sinks, and prevents the blood from touching the glass at the bottom, where it is very prone to adhere if left quiet for one or two minutes. There is not so strong a tendency for it to adhere to the sides of the tube

5. Much squeezing of the part from which the blood is obtained is to be avoided. The prick should be made deeply enough to cause 2 or 3 drops to exude without much pressure.

6. It would be well to have a urinometer graduated up to 1070, but as 1060 corresponds to about 95 per cent of hemoglobin in Hammerschlag's table, the higher graduations are not essential, because the clinically important specific gravities are usually the low ones. The reading should always be taken immediately after the blood-drop floats indifferently, because the evaporation of such volatile substances as chloroform and benzol will change the reading in a very few moments.

The conclusions to be drawn from this study are briefly :

1. A knowledge of the blood that will be of diagnostic value to the physician may be obtained even in the absence of a microscope for corpuscle study.

2. The hemometer in common use is an expensive instrument, requires considerable practice, and is liable to errors of from 5 to 10 per cent under the most favorable conditions.

3. The chloroform-benzol method for hemoglobin-estimation requires apparatus that is inexpensive, can be readily performed, and gives more accurate results than the hemometers generally used. Lichty (C. L.) Phila., M. J., 1898, ii, 242. J.

Observations on the Blood of Tubercular Patients.

These observations were made on patients in the advanced stage of the disease, with cavities, and, at times, hemoptysis. As to the cause of the apparent anemia in tubercular patients, Cabot and others have discovered that it is not due to a reduction in the hemoglobin. The same authorities state that in uncomplicated tuberculosis the number of red corpuscles remains practically normal. Dr. Johnson paid especial attention to the patient's physical condition as to cavities and hemoptysis. The observations were made before meals, and no attacks of hemoptysis occurred between the first and second examinations. The patients were up and out of doors most of the time during the day. The microscope was used to compute the blood count. Of thirty-three patients examined all had cavities of various sizes, and all had had hemorrhages or hemoptysis. Of these thirty-three patients twenty-five were found to have leucocytosis, that is, the white cells ranged above 7500 per centimeter. These twenty-five also showed cavities. Cabot and others state that there is always a leucocytosis when there are cavities and after hemorrhages. Nine of the thirty-three showed a red-blood count of 5,000,000 or more, which Cabot states as a normal basis. The remaining twenty-four showed a red-cell count in many instances far below 5,000,000, and in no case was the hemoglobin up to normal. In only one case did it reach seventy-five per cent.

Having made observations to determine the character of the blood, he also made some therapeutic observations, using 5 per cent. nucleinic acid, No. 2, in the first 10 cases; 5 per cent. nucleinic acid, No. 1, in the second 10 cases; ferratin in 6 cases, and heminol in 5 cases. The first 10 patients were given 22 cubic centimeters every four hours for twenty-four hours. The second blood observation in the first 10 patients showed 6 out of the 10 to have a still greater leucocytosis. The red-blood count was practically unchanged. The hemoglobin showed an increase of from 3 to 10 per cent. in these instances in which there was a leucocytosis. The second 10 were put on the nucleinic solution, No. 1, which was chemically pure and for hypodermic use. Thirty minims were giv-

en hypodermically every four hours for twenty-four hours. The second count in these showed the same condition as in the first 10, who were given No. 2 solution by mouth. None of the patients complained of any bad effects, but experienced a sense of renewed energy, the circulation being better and the appetite improved. He had noticed repeatedly the splendid stimulating effect of nucleinic acid in every case in which he had used it.

Five patients were put upon heminol, 15 grain doses being given every four hours for thirty-six hours. A second examination of the blood of these patients showed an increase of the red cells in four cases. Three showed an increase in the number of white cells, and only two showed an increase in the percentage of hemoglobin. The blood of the thirty-three patients was stained and studied, and in but two cases was there found a poikilocytosis. Johnson (G. W.), Medical News, N. Y., ixxiii, 124. J.

Florence's Test for Semen.

Professor Florence, of Lyons, has made a discovery which he thinks may prove to be of considerable medico-legal importance, namely, that the addition of a strong aqueous solution of iodine (1.65 part of iodine, 2.55 parts of potassium iodide, and enough distilled water to make 30 parts) to human semen gives rise to the immediate formation of dusky-brown microscopic crystals, partly long rhombic tables and partly fine needles. C. Posner (Berliner klinische Wochenschrift, 1897, No. 28; Centralblatt für innere Medicin, 1898, No. 18) has succeeded not only in eliciting this reaction, but in determining that it is due to the combination of iodine with spermine. Hence it results that the reaction may be produced with any fluid containing spermine, and therefore is not absolutely a test for semen, although it is a valuable import as a corroborative test. This is Posner's opinion, but, inasmuch as suspected seminal stains are practically never due to ovarian juice or other non-seminal fluids containing spermine, we are inclined to think that the Florence test will prove to be more valuable than he is ready to admit. N. Y. Med. J., 1898, lxviii, 97. J.

Rachitis.

The author's researches, extending over a period of some seven years, establish 1., the parasitic origin of rhachitis, 2., that the avenue of entrance of the parasite is the intestine and the skin (exema), 3, that the disease is slow and wearing, consisting in a pyogenic attack principally on the bones and nervous system. Children's mouths are infested with staphylo and streptococcic microorganism, so that the milk swallowed by them is nearly always infectious and ready to attack the intestines as soon as any catarrhal process has been initiated. This is peculiarly the case during the teething period. Once in the circulation, the pyogenic organisms tend to locate themselves in the organs which, in childhood, are most active—the nervous system, bones (epiphyses,) &c. Injection of staphylocccoic cultures in young rabbits was followed by epiphysitis. Mircoli (S.)—Meineiinfectioese Theorie d. Rhachitis. Deutsch. Arch. f. klin. Med., 1898, lx, 48.

A. S.

Staining the Nuclei of the Red Blood Corpuscles.

At a recent meeting of the Academy of Natural Sciences of Catania, Italy, Petrone recommended that the preparation be first stained with Lugol's solution and then with either gold chlorid or silver nitrate. The resultant reaction is peculiar to the red blood-corpuscles, thus distinguishing them from the leukocytes and other cells. The reaction is thought to be dependent upon the iron in the nuclei. The hemoglobin contains much less iron. The nuclei of the leukocytes contain none at all, whereas the protoplasm contains a slight amount. In various forms of anemia this chemical reaction shows that the nuclei of the erythrocytes contains much less iron than normally. Phila. M. J., 1898, ii, 256. J.

BIOCHEMISTRY IN RELATION TO MEDICINE AND HYGIENE.

UNDER THE CHARGE OF
E. A. DE SCHWEINITZ Ph. D., M. D.,
Director Biochemic Laboratory, B. A. I., Agricultural Department.

Biology of the Tubercle Bacillus.

Aronson communicated to the Berliner Medicinische Gesellschaft at a recent meeting a most important contribution to the biology of the tubercle bacillus. Aronson first made mass cultures of this bacillus, obtaining in all about three hundred grams of pure growth. This he extracted with alcohol and ether. The ethereal extract when evaporated left a brownish, stringy mass behind, which equaled twenty or twenty-five per cent. of the total mass of original culture. Chemical examination of this mass showed that it was not, as Klebs had assumed, a fat, but that it contained seventeen per cent. of free fatty acids, while the remainder was a pure wax. The bacillus forms this wax even when grown upon inorganic culture media. It has staining-properties similar to the bacillus, *e. g.*, it stains with carbol fuchsin, which, however, is not set free or only with great difficulty in hydrochloric alcohol. Aronson was able also to obtain a similar substance from diptheria baclial, which substance exhibits, however, the same peculiar staining-properties with carbol fuchsin. The wax of the tubercle bacilli occurs mostly between but also in part in the bacilli themselves; hence the fact that sections and other preparations of these, even though treated with alcohol, xylol, etc., still take up the stain. Aronson. Med. Rec., N. Y., 1898, liv, 212.

A New Tuberculin.

Drs. F. Raymond and P. Ravant, in a report to the Society of Bioglogy of Paris on May 28th, stated that bacilli of the tuberculosis of fish, discovered by Dubard, had been cultivated by them in bouillon containing glucose and glycerin, and that on filtering these cultures through porcelain they obtained a toxin which by its smell and its biological reactions exactly resembled the tuberculin derived from the bacillus of tuberculosin occurring in the human subject. With this new toxin they made experiments in two series, as follows: First, a tuberculous guinea-pig was inoculated with the toxin, the result being the production of pyrexial reaction with shivering and prostration lasting for six hours, although neither the control guinea-pig nor even the tuberculous guinea-pig which had received control injections of glycerinated bouillon showed any pyrexial reaction. Secondly, two guinea-pigs which had been inoculated on different dates with the bacillus of fish tuberculosis, and which exhibited some emaciation, were injected with half a cubic centimetre of ordinary tuberculin they both showed a well marked pyrexial reaction amounting in the first to 2° C., and in the second to 1.5° C. Med. Rec., N. Y., 1898, liv, 96.

Anytin and Anytole.

By treating the mineral oils that contain a good deal of sulphur with sulphuric acid, Helmers has obtained a substance, the ammonium salt of which he calls "anytin." It is a brown-black hygroscopic powder which is readily soluble in water in all proportions. It contains carbon, hydrogen, oxygen, 16½ per cent. of sulphur and 4½ per cent. of ammonia. The addition of alkali and salts to its solutions causes the precipitation of anytin like a soap. By the addition of salts of the alkali earths and most metals, this precipitate is dissolved. Strong acids precipitate from the solutions of anytin a grayish black mass. This precipitate is the sulfo-acid. The acid yields upon drying a hygroscopic powder which is soluble in water and has an acid reaction. By addition of anytin to cresol and also to most substances of the nature of camphor (which are closely allied) they are made quite easily soluble, the amount of solubility however depending of course upon the nature of the substance and the concentration of the anytin solutions. The stronger it is, the more of the particular body will be dissolved. Anatole and its derivatives seem to be valuable in checking the growth of micro-organisms and have about the same power as the cresols. Löffler (F.) Deutsch. med. Wchnschr., 1898, No. 10.

Therapeutic Notes.

Let the Skin Breathe.

If you want something against rheumatism, something which will keep your skin in an active condition so that it can rid your system of the waste, something which will render your skin and the air around it dry, and will not let you get chilled, but make you thoroughly comfortable, just give the Deimel Linen-Mesh Underwear a trial.

New Price-List.

We are in receipt of a copy of H. K. Mulford Company's new price-list of Pharmaceutic and Biologic products. It is thoroughly revised and enlarged to 228 pages by the addition of new and enlarged sections. The catalogue is attractive in style and a compendium of valuable information. Among other new and interesting additions we note a list of standard ointments, soluble elastic capsules and granular effervescent salts. The nomenclature of their diphtheria Antitoxin has been materially changed, a fact which will be appreciated by the numerous friends of this product.

Chronic Ulcerative Gastritis.

Dr. T. J. Biggs of Sound View Hospital, Stamford, Connecticut, reports the case of an American woman, thirty years of age, who had suffered with chronic gastritis for five years under various treatments, including digestive ferments, and washing of stomach, without any continuing relief. He determined to employ an exclusive bovinine treatment. Patient was put on a teaspoonful of bovinine in boiled milk, preceded by a tablespoonful of lime water, every two hours. The first dose was vomited; the second caused some disturbance, but was retained; the third was retained, without any inconvenience, and the patient said it seemed to give her great ease. In a month the patient was discharged cured, with a gain of three and three-quarter pounds in weight, and feeling perfectly well, as she expressed it.

Intestinal Antisepsis in Fevers.

As an intestinal antiseptic we have nothing better than salol. When we add the antipyretic and anodyne effects of antikamnia, we have a happy blending of two valuable remedies, and these cannot be given in a better or more convenient form than is offered in "Antikamnia and Salol Tablets," each tablet containing 2½ grains antikamnia and 2½ grains salol. The average adult dose is two tablets. Always crush tablets before administering, as it assures more rapid assimilation. If in the treatment of disease an intestinal antiseptic is indicated, would not the scientific treatment of the conditions preceding it, be the administration of the same remedies?

Chronic Gouty Affections.

In cases of chronic gout a remedy is generally required which is adapted for long continued administration in order to obtain any lasting improvement. Most of the drugs recommended have the disagreeable feature of disturbing the digestive organs after being taken for some time or of exciting the aversion of the patient. Lycetol is entirely free from these disadvantages. It has an extremely pleasant taste, is always well tolerated, and has proven a most efficient anti-arthritic remedy. Its action in cases of gout is not only to render the uric acid circulating in the blood more soluble, but to promote its excretion by way of the kidneys, owing to its marked diuretic effect.

Food and Teeth.

George W. Williams, D. D. S., of Richmond, Indiana, one of the leading dentists of that State and a popular writer or dental subjects, in a recent article says:—"Many of the prepared foods sold for children are destitute of the qualities necessary to form sound and painless bones and teeth, and there is a great difference in growing up with fine grained, well glazed teeth in comparison with having the brittle, chalky teeth we commonly see. Diet is of the first importance in promoting the upbuilding of the bony system, and incidentally we would state that as a food for this purpose there is nothing that will equal Imperial Granum. It is a

pure, unsweetened food, made from the most nutritious portions of the finest growths of wheat. No derogatory word has ever been uttered by the medical or dental professions against Imperial Granum and its bone-building qualities.

Hot Blooms.

Dr. Mac Watters, Resident Obstetric and Gynecological Officer to the Royal Infirmary, Bristol, uses Peacock's Bromides extensively both in private and hospital practice and he finds it of great and trustworthy value in the treatment of diseases of women more especially about the climacteric, it frequently greatly diminishing the severity and frequency of those neurovascular symptoms as "hot blooms." Its great advantage over the prescribing of the simple salts is in the diguising of their saline taste and the presence of carminitives gets over the objections to prescribing large doses.

Sanmetto in Genito-Urinary Diseases. Substitution.

Dr. Joseph W. Robb, of Russell, Kansas, says he has prescribed Sanmetto with much satisfaction in diseases of the genito-urinary organs, with marked benefit in prostatic troubles of old men, and in different kinds of urethral inflammation, even in gonorrhea. It is certainly an excellent vitalizing tonic to the reproductive system. He uses original packages, except very rarely in smaller quantity, and then he is absolutely sure that no substitution is practiced, as he sees to it with his own eyes, if necessary, that the genuine article is gotten by his patients.

Neurasthenia.

Dr. Jerome K. Bauduy in a paper read before the St. Louis Medical Society, February 5, 1898, says he reluctantly gave a trial to Gude's Pepto-Mangan, anticipating that he would have to combat the usual effects of most of the other preparations of iron. The results, however, were indeed a surprise to himself, for the deranging sequelæ were so slight that but in very few instances in his extensive utilization and experience with this special preparation was he obliged to discontinue it. His experience having led him to believe that iron and manganese in combination are both indicated in the vast majority of cases of neurasthenia, he is now convinced that Gude's Pepto-Mangan will prove a great boon to the patient and the physician.

Diphtheria Antitoxin Patent.

The Editor of the Virginia Medical Semi-Monthly declares that although Prof. Behring seems to have secured patent rights in the United States, it is by no means settled that his claim will be sustained. Parke, Davis & Co., who have so often been leaders in many good things for professional and humanitarian interests, announced that they have entered the courts to resist the patent claim of Behring and generously announce if they succeed, as in all probability they will, no restriction will be laid upon the production of good diphtheria antitoxin by any worthy house. They further authorize the statement that they will hold themselves pecuniarily responsible for any recovery suits that the Behring lawyers may bring against druggists or doctors who may use the reliable antitoxin of their manufacture. The Mulford Co., assumes the same responsibility in regard to its antitoxin.

Springfield, Me., Sept. 27, 1897.

Yours just received and contents noted. I give you permission to publish any testimonial you think it proper from me. I cannot say too much praise for McArthur's Syrup. Anything I can say or do for you I am ready and happy to do. I have given McArthur's Syr. Hypophos. Comp. to several consumptive patients within the last six months, according to my directions, in whose cases it seems to act like a specific. It seems to exert a powerfully curative influence. I shall continue to use it in my practice.

WM. H. H. BRIGGS, M. D.

TRANSACTIONS OF THE MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA.

EDITING COMMITTEE:

W. W. JOHNSTON, M. D., GEO. M. KOBER, M. D., JAS. D. MORGAN, M. D.

MEETING OF MARCH 9, 1898. Dr. S. C. Busey, President, in the Chair.

CÆSAREAN SECTION.

By M. F. CUTHBERT, M. D.

The patient was a colored girl 17 years of age primipara and had been in labor for one week. She was brought here from the country after this length of time to Garfield Hospital. On examining her found that the conjugate diameter of the pelvis was about two inches; all of the other pelvic diameters were contracted. Large head appeared to be presenting above the superior straight. Drs. Fry, Stavely and Wellington also examined her and we all agreed that an abdominal section was necessary. She had been attended by two physicians in the country and in their efforts to relieve her they had applied the forceps, which resulted in a lacerated cervix. On admission her temperature was a little over 100F, pulse 160, granular and hyaline casts in the urine, together with albumen. Collapse was marked and it was a question whether she would live long enough to be operated on. It was decided that there was too great contraction of the pelvic diameters for craniotomy. The supposed fetal heart sound was found upon examination to be a transmitted sound from the woman's heart.

However, it was finally decided to give her the benefit of an operation, and about three o'clock in the morning the operation was performed. In spite of the fact that albumen was present in the urine we decided in favor of ether on account of the extremely weak condition of the heart. She was prepared antiseptically, an incision made in the median line, and then a rubber tubing was placed around the cervix and the uterus turned out on the abdomen. It was very difficult to get the uterus out. The intestines were protected by hot towels. An incision was made in the median line of the uterus, and the placenta was found to be presenting at that point. I perforated this and extracted the child. Clamps were put on the cord. The child had been dead for an indefinite time. The placenta was delivered without difficulty, but in extracting the child the lower segment of the uterine cut was torn; the hemorrhage was moderate, but not excessive, and was easily controled by the tube. The woman's condition while on the table became alarming. She was given

strychnine freely, together with nitroglycerin and brandy.

In closing the wound I used silk, placing the sutures a short distance apart and passing them down to the mucous membrane, but not through it. The uterine incision was easily closed with the exception of the tear. There was some little bleeding from this, but it was controlled without difficulty by sutures. The uterine cavity was irrigated with normal salt solution and a piece of iodoform gauze passed from the uterus into the vagina. The abdominal incision was closed in the usual manner. The woman was put to bed and given normal saline solution by rectum every two hours. Coffee was also given by rectum and strychnine administered hypodermically. She recovered from the shock of the operation very well, but the heart later began to show signs of weakness and the kidneys could not be induced to act. She lived for about 30 hours after the operation and during that time there was no secretion from the kidneys.

A postmortem examination made the same day disclosed no peritonitis, but an organic lesion of the kidneys which was the immediate cause of death. If the case had been operated on earlier the result might have been different. It was impossible to deliver the woman by craniatomy; there being no room for forceps. The only chance in this case was a Cæsarean section, which was followed unfortunately with fatal result.

DISCUSSIONS.

Dr. T. C. Smith said: He had the good fortune to witness two Cæsarean operations within a year, both performed by the same surgeon, Dr. Williams. In both cases the mother and child were saved. The operations were both promptly performed as soon as labor commenced. The second case however was complicated by a large fibroid. This was clamped and cut off and the child removed. In both cases the surgeon operated promptly and before the women were exhausted. It is in these kind of cases where physicians can hope for success. In cases like Dr. Cuthbert's where the woman was exhausted by long labor nothing else could be expected. With regard to craniotomy cases, since the President of the society so ably antagonized the performance of this operation on the living child it is a pretty brave man who dares to do it.

Dr. King said: All regretted that they were not able to congratulate Dr. Cuthbert on the result of his Cæsarean section case. It was with considerable reluctance that he placed his opinion against that of Dr. Cuthbert, Dr. Fry and the other gentleman named. If the Doctor had made himself familiar with the literature of Cæsarean section, and with the experience of other operators throughout this and other countries, Dr. King thought he would have seen that the Cæsarean section was not the proper operation to be done in this case. Two most important conditions should be present to allow any hope of success. First: the woman should not have been in labor more than 24 hours. Second: she should not have been injured by other attempted methods of delivery. This woman had been in labor six days and she had been lacerated by futile efforts to deliver with forceps, so that none of the conditions were present to justify the hope of a successful result. With regard to craniotomy, the conjugate diameter in this case was two inches, and large enough to admit the introduction of forceps, and lots of successful craniotomies have been done under proper technique, with a pelvis as small as this. Craniotomy was the only hope of this woman, and this operation could have done her no harm; it certainly could have been done quicker, so that while the woman might have died anyway, the craniotomy would have been by far the wiser operation of the two. Again, in doing a Cæsarean section in a case of this kind, it is a question whether the uterus should not have been removed by

the Porro operation. The probability being that the organ was already infected, the conditions present therefore were such as to render a craniotomy preferable to Cæsaraen Section.

Dr. Stone said: It was rather doubtful if craniotomy could have been safely accomplished. He understood Dr. Cuthbert to say that death was certainly not due to sepsis. In this case it seems that Dr. Cuthbert did right. If the uterus had been removed entire, then the danger of infection is almost nil, and it is possible that a Porro operation would have entirely avoided this danger.

Dr. Cuthbert said: The chance of recovery in these cases is in direct proportion to the time of the operation. The operation should be done at the earliest possible moment. I saw a patient at the Freedman's Hospital, which may be one of the cases Dr. Smith referred to. The patient required no anæsthetic, being in uræmic convulsions, and the operation was successful. In my case of craniotomy, the child had been dead for an indefinite period and the operation was not done simply on account of the hydrocephalus. If the child had been alive, I would have recommended abdominal section or symphysiotomy. In the case of Cæsarean section I referred to, I think the woman would have recovered if it had not been for the organic disease of the kidneys; I believe her death was most likely due to this condition of the kidneys. I do not believe that craniotomy would have been practicable in her case, as Dr. King suggests; in fact we all agreed that it would not have been. The conjugate diameter at the brim was 2 inches, but we all know that these measurements are approximate. Parro's operation was also thought of at the time and discussed; the uterus was examined to ascertain if it was septic, but there was nothing in the interior at the time to justify such a conclusion. There was a temperature before the operation of a little over 100; whether this was a septic temperature or not is a question. The appearance of the uterus justified us in our conclusions—that it was in a perfectly healthy state.

Meeting of March 16, 1898.

The President, Dr. S. C. Busey, in the Chair.

Report of the Editing Committee.

The President referred to the Editing Committee the following letter:

March 8, 1898.

S. C. Busey, M. D.,

President of The Medical Society of the District of Columbia.

Dear Sir: The contract between The Medical Society of the District of Columbia and The National Medical Review, which went into effect June 1897, will expire with the appearance of the April number of that Journal. This contract provides that for a sum of money equivalent to a subscription of one dollar from every member of the Society, the editors of the Review will publish 200 pages of such matter, in the form of Transactions, as is furnished them by the Editing Committee of the Society. It also provides that for $50.00 additional the editors of The Review will supply the Society with 50 bound volumes of the Transactions at the end of the year.

In spite of the closest economy, the editors of The Review find that they have lost heavily in carrying out this contract, and can convince you from their books that the sum to be received from the Society will not reimburse them for one-half the money they have actually expended. Furthermore they have suffered serious inconveniences by reason of the fact that they have been obliged to advance the money to pay the printer monthly, they themselves not being paid by the Society until the end of the year.

The editors are anxious to continue the publication of the Transactions but see no way in which this can be done unless they are guaranteed the sum of $350,00 in twelve equal monthly payments and a further amout of $50.00 for the 50 bound volumes of the Transactions payable in the

same manner. Even at this rate the editors will lose more than $100.00, and however much they would regret to cease the publication of the Society's Transactions, cannot in their efforts to build up a journal worthy of the Society and of the professsion in this city, encumber themselves with a larger debt.

The editors of the Review will be glad to meet the President of the Society or any committee to which this matter may be referred, and beg that it may be adjusted as quickly as possible.

Yours very truly,
THE NATIONAL MEDICAL REVIEW,
By GEORGE W. JOHNSTON,
THOMAS E. MCARDLE,
Editors and Publishers.

The committee has examined the books of the Review, and has become convinced that the Transactions have been published at a loss to the Editors of at least $250 a year.

In view of these facts and of the unwillingness of the editors to continue the publication of the Transactions on the same terms as heretofore, the committee recommends the acceptance of the offer of the editors to publish the transactions for $350 a year, with $50 additional for the 50 extra copies for distribution outside of the society.

At present the society pays $277 yearly, with $50 added for extra copies, so that the amount over and above the present payment will be $73 only, and with each annnal increase in members this amount will grow less.

It is recommended that this plan be adopted; the assessment of $1 on each member, entitling him to receive a copy of the Review, to continue as before, and a sum sufficient to raise the annual payment to $400 to be paid out of the Treasury.

It is also recommended that the payment of $350 be made in twelve equal installments, that the sum of $50 be paid when the bound volumes of the Transactions are furnished to the Society.

WILLIAM W. JOHNSTON,
GEO. M. KOBER,
JAS. D. MORGAN,
Committee.

FIBROMA MOLLUSCUM.

Dr. Lamb presented a specimen of fibroma molluscum weighing 6.5 lbs. removed March 13, 1898, from the dorsi-lumbar region of a white man about 30 years old. It had been growing about 7 years. There was no pain in the growth, but the sebaceous secretion which accumulated in the interstices of the cauliflower-like growth underwent decomposition and was offensively sour. The tumor varies in firmness; in some parts is quite soft and flabby; in no part is it very firm. The probability is that it is a soft fibroma with some oedema from interference with the circulation. The operation was done by Dr. D. H. Williams, surgeon-in-chief of Freedman's Hospital.

CANCER OF THE CÆCUM.

Dr. G. W. Cook presented a specimen of cancer of caecum with the following history:

W. B. L., white, male, aged about 62 years, was first seen professionally in Feb. 1897. He was then suffering from diarrhoea and complained of some rectal trouble. Said he had haemorrhoids for years. I saw him again in October, 1897 and in January 1898. At each time he had diarrhoea and complained of pain in his rectum. On February 14th, 1898, I found him suffering from a severe diarrhoea and with great pain in the rectum. An examination revealed haemorrhoidal tumors and infiltration of the tis-

sues beneath the rectum, also a painless tumor in the ileo-caecal region of several months standing and on closer examination of the rectum an imperfectly drained puss cavity. In March free drainage was established. The patient being much emaciated, the tumor in the ileo-caecal region was easily palpated, and in consultation it was suggested that it might be cancerous. The patient died from asthenia March 12th. At the autopsy a tumor of the caecum was found, which from its gross appearance was judged to be cancerous.

HEAD AND ARM PRESENTATION, WITH SPONTANEOUS DELIVERY.

By Edwin M. Hasbrouck, M. D.

Maria B——, multipera, colored, aged 28; the head rested upon the perineum in R. O. A. position with the left arm prolapsed along side of the head and the hand projecting from the vagina. Labor had been in progress since the previous night; the bag of water had ruptured and the pains had been more or less constant ever since, with no result, and the projecting hand was purple and apparently lifeless. Examination showed a roomy pelvis with the prolapsed arm lying at the posterior commisure wedging the head up against the pubes in such a manner as to make delivery apparently impossible; soon after this the pains increased in severity, the perineum slowly yielded, the head was pushed back and supported to prevent rupture, and delivery was accomplished spontaneously and without rupture of the perineum.

The child was a female, and weighed 4½ pounds four days after delivery. The head was considerably pressed out of shape being exceedingly long from chin to occiput, and exceedingly narrow in the biparietal diameter; but unfortunately I was not able to measure these diameters.

Erbs paralysis was very marked in the left arm of the child, the deltoid being particularly affected and the biceps to a certain extent.

DISCUSSIONS.

Dr. King said: He did not think the complication of an arm presenting alongside of the head is very rare. He has seen three cases of this kind, all of which terminated favorably, either by pushing back the presenting arm, or, this being impracticable, by delivering the head with forceps while the arm remained. The child was very small in this case so that there was space enough for delivery to occur. If he understood Dr. Hasbrouck correctly, he stated that he attempted to push back the head and turn this child. Such a procedure would appear to be unnecessary and impracticable. When the head has passed the os uteri and is down on the perineum you cannot push the head back into the uterus; he has known this mistake made before.

Dr. Fry: Had little to say except that it is one of these cases described as complex or complicated presentations. Cozean & Tarnier report a case of the left foot and head presenting where it was impossible to deliver the woman without embryotomy. In the treatment of these cases the woman can usually be safely delivered by the application of the forceps. If the arm could be passed back into the uterus it would be a good procedure, then the forceps should be applied. In other cases the termination is spontaneous. This, however, requires a large pelvis or a small child. In this case it was a small child because the pelvic diameters were a little below the normal.

Dr. Reyburn said: Many years ago when he was a student he saw a case of this kind. It was a large child and large athletic woman, with the arm protruding from the vagina. The woman remained in labor nearly 48 hours, and it was impossible to deliver by the forceps and, finally, after being satisfied that the child

was dead, the doctor amputated the arm at the shoulder joint. After that, the delivery was affected by the application of the forceps.

BROMOFORM POISONING.

By Dr. Larkin W. Glazebrook.

In bromoform poisoning the general reflexes are entirely destroyed. Von Horoch has used it as a general anæsthetic in several cases in man. He rated the general cyanosis, especially of the face. Urine at times contained bromine. In poisonous doses there is general pallor, dilated pupils, collapse, with heart failure.

Benome and Mazza refer to it as a possible valuable anæsthetic, they have noted irritation of the conjunctive and nasal mucous membranes. They have noted that the narcosis is slowly developed and passes off slowly.

For the last few years our attention has been called to it as a possible curative drug in pertussis. Stepp of Nuremburg, Fischer of N. Y. and J. T. Duncan of Toronto, all speak in the highest terms of it, claiming that after it has been taken for 2 or 3 days that there is a reduction in the number of paroxysms and in their severity; that the course of the disease is cut short, running as a rule only two to three weeks. They also claim that complications are not so likely to occur. In regard to the dose they all begin with a dose of 3 drops for children from 3 to 6 years of age, although larger doses are occasionally used. Potch does not refer to the drug.

Neumann of Berlin, thinks it may affect the attacks, but does not lessen duration of disease. Neither Vogel, Osler, nor Strumpell mention it.

Ullman of Berlin is positive in his opposition to its use. In this connection I will state that 10 children were placed upon it, at the same time that other groups were being treated by other methods. Those under bromoform although it has been carefully used for 3 weeks, do not appear to have done as well as any of the others. The paroxysms have not apparently lessened in number or severity; the disease appearing to run its usual course.

Cases are on record in which 3 drops in a child 4 years, and 2 drops in one 15 months old, has produced serious symptoms.

L. W., 4½ years old, inmate Washington City Orphan Asylum, developed pertussis with a large number of other children 3 weeks ago. With other children she was placed upon a fresh preparation of Merck's bromoform, receiving 3 drops every 3 hours, the drug was continued for 3 weeks. Paroxysms were never very severe, and the child was improving, although 3 or 4 paroxysms still occurred during the 24 hours.

On March 5th the child was apparently very well and playing with the other children in her department. The child at the time of the administration of the medicine got hold of the dropper used and introduced the contained quantity in its mouth. The nurse remembered that the dropper tube was half filled. Ten or fifteen minutes later the child was seen to lie down on the floor, and the person in charge seeing her, supposed she was asleep. At 12 m. the dinner bell rang, but the child did not respond. The attendant attempted to arouse her but failed to do so; she then called for assistance. At this time the child was limp and apparently unconscious; she was however breathing quietly. Involuntary evacuation of bowels and bladder had taken place. I was sent for and Dr. McGee was called in immediately. Before either of us ar-

rived the matron administered the white of an egg and at 12:15 the child vomited twice. Dr. McGee arrived at 12:20 and found the child collapsed, cyanotic and apparently dead. He resorted very promptly to artificial respiration, after drawing the tongue forward, swabbing out the large quantity of mucus. I arrived at 12:30 and at once administered hypodermic of nitroglycerine, which was later followed by $\frac{1}{120}$ gr. of atropia. At this time, anæsthesia was complete, the conjunctival and other reflexes being obliterated. The pulse was hard to count, but was from 160 to 200, the respirations were regular, but would occasionally need some stimulation in order to get rid of the large amount of mucus. With the assistance of Drs. Wellington and McGee a stomach tube was used and the stomach carefully emptied; XIV of strong coffee was inserted in this way. At 1:15 the child's condition was somewhat improved, although the unconsciousness and anæsthesia were still present. Whisky was given by enema and the child placed in bed with hot bottles around it. At 1:45 the color was much improved and the child was apparently sleeping quietly. At 2:15 the mucus had apparently filled the trachea and this was easily removed, the dose of atropia was repeated; at 2.46 the pupils had responded to the atropia, the respirations were normal and pulse 120. After resting quietly until 3.30 or 4 p. m., the child awakened in a few moments, appearing to be all right. At 7 p. m., when I next saw Leo, she was crying to sit up and begging for food. Inquiry was then made and the method of securing the drug as above noted. As well as I can judge from the report given by the attendant the child received, besides the 3 drops given, 15 drops.

In conclusion I will say that the symptoms were most alarming and resembling the threatening narcosis occasionally seen in the administration of chloroform. It is interesting to note that she has never manifested any symptoms of pertussis since.

The pupils were only slightly dilated, conjunctival mucus membrane was inflamed; there was marked diminution in blood pressure; the cyanosis resembling in a marked degree that caused by the administration of nitrous oxide gas.

DISCUSSION.

Dr. ADAMS said: In the discussion of the treatment of whooping cough which took place at the meeting of the American Pediatric Society in Boston, a number of papers were read, and among the drugs, bromoform was mentioned. The author's conclusion was that it had not proved beneficial. At another time there was a case of bromoform poisoning reported in the treatment of whooping cough, with symptoms similar to those given by Dr. Glazebrook.

MEETING OF MARCH 30, 1898.

The President, Dr. S. C. BUSEY, in the Chair.

Dr. Smith moved that a committee of three be appointed to draft suitable resolutions to be forwarded to the president upon the fiftieth anniversary of his graduation in medicine, expressive of the esteem, etc., in which he is held by this body.

The motion was carried, and the vice-president, Dr. Kober, appointed Drs. T. C. Smith, J. Ford Thompson, and J. Taber Johnson a committee.

WASHINGTON ACADEMY OF SCIENCES.

The president explained the status of this Society in its relation to the Washington Academy of Sciences and submitted the accompanying letter:

WASHINGTON, March 29, 1898.

Dr. S. C. BUSEY,

President Medical Society of the District of Columbia.

DEAR SIR: At a meeting of the Washington Academy of Sciences held to-day the following resolution was unanimously adopted:

Resolved, That the Washington Academy of Sciences, an organization created by the Affiliated Scientific Societies of Washington as their federal head, extends to the Medical Society of the District of Columbia a cordial invitation to join the group of affiliated societies.

Respectfully yours,

G. K. GILBERT,

Secretary Wash. Acad. of Sciences.

The following resolution was then adopted:

The Medical Society of the District of Columbia responds with pleasure to the cordial invitation of the Washington Academy of Sciences, and accepts with gratification its election to the membership of the Affiliated Scientific Societies in the Academy

Dr. Lamb nominated Dr. Busey, as the vice-president from this Society in the Washington Academy of Sciences. Elected.

Dr. Reyburn moved that the President appoint a committee of three to nominate candidates for membership in the Washington Academy of Sciences. Carried.

Dr. Dufour presented the following pathological specimens:

1. Ruptured eyeball.
2. Enucleated Eyeball.
3. Myxo-fibroma of middle ear.

DISCUSSION.

Dr. L. H. FRENCH said: The diagnosis of ruptured eyeball is not difficult, one symptom always being present, viz: decreased tension and softness of the eye. Injuries of this sort are usually serious on account of the loss of the vitreous, but not necessarily so on account of loss of lens. He reports a case where a man was hooked by a cow, losing both lenses; the man afterwards having perfect vision by use of proper glasses.

Dr. BUTLER said: Rupture of the eyeball is not an uncommon accident, and he referred to an unusual case which was reported before the Opthalmalogical Society, one of spontaneous rupture. The case was that of an old man, 84 years old, who suddenly had a severe pain in the eye followed by severe hemorrhage. The rupture was due to profuse hemorrhage in the globe of the eye.

Dr. BURNETT said: The subject of ruptures of the eyeball is of great importance, because some very extensive injuries recover, while on the other hand slight ones oftentimes lead to destruction of the eye. When an eye is first examined, it is not always possible to determine what the result will be. As illustrating this point, he referred to the two cases, one reported to the Society about a year ago, of a man who had a piece of steel imbedded in the eye; the steel was removed and the patient recovered without any permanent injury. The second case was that of a man who was struck in the eye by a piece of hot iron; the most improved treatment was used, and although hot iron is usually regarded as aseptic, this eye was lost. He concluded by saying that it is well to treat all such cases conservatively.

SUICIDE.

BY DR. W. W. GODDING.

Mr. President, and Members of the Medical Society:

The startling frequency of late of prominent cases in our midst, of the careless use of fire arms, escaping gas, heart failure, and dreamless sleep, opium induced, raises the question, "Is an epidemic of suicide threatening the public health?"

I shall consider, to-night, only the conditions under which suicide occurs in the United States, where no forfeiture, nor legal disability, follows the act. I believe, however, that all this is now

done away with in England, although, under criminal law there, he who aids, or abets a successful suicide is guilty of murder, and, down to 1823, they buried the body of the suicide at the cross roads, driving a stake through his heart, and, up to as late as 1870, his personal estate was forfeited to the Crown. To-day, the established Church of England, by its canons, is still forbidden to make use of the burial service over the remains. All this is different here. In New York, perhaps in some other States, the attempt at suicide is a misdemeanor, punishable with imprisonment, but, if his "leap in the dark" is successful, his property descends undisturbed to his heirs.

The church still holds that self destruction is a mortal sin, but where is the hold of the church gone? Scientific men of to-day, as I have known them, are mostly agnostics, and the world has gone far in their way of thinking. I am not defending, or apologizing, for their want of faith, I am simply stating a fact, in reference to its bearing upon the restraining power of religious belief on the suicide.

But it is not alone in matters of faith that society in America has changed since the war; the unrest is in everything. The high pressure life, which we lead now, is in striking contrast with the quiet days of business and the moderate ambitions for wealth that satisfied the best citizens then.

The situation is hardly better with the laboring masses, to whom hard times mean pinched circumstances, and blind strikes, only making matters worse. I am only hoping to show how the conditions of life at the present hour, in America, present a fruitful soil for the rank growth of suicide. The old faith is obsolescent; the foundations of common honest are being replaced with commercial honesty; the view of the dollar cuts off almost every other prospect; the political atmosphere is murky, and thoughtful men are beginning to ask if war would not clear it, if conflict is an unmitigated evil?

Who is the man of to-day who comes into this environment? He is more distinctly neurasthenic than his ancestors. This enables him to feel keenly, to think intensely, and accomplish more, in the six hours of a business day, than his slower paced sire achieved in a week, swapping colts, on Sundays, included.

In addition to environment, some are born into the world with a sad heritage. Maudsley says, justly. "They are the step-children of nature, and groan under the worst of all tyrannies, the tyranny of bad organization." How large a part hereditary predisposition plays, in the development of insanity may never be accurately determined, but, we are certainly within bounds, in saying that it is a potent factor in not less than one-fourth of the cases. It need not be insanity in the Sire; alcoholism is a sin in the parent that is visited on the child with some neurosis, or defect in organization. Epilepsy, Scrofula, Syphilis, are all signs of decadence, all point to the heritage of woe.

I begin with the question often asked, "Can a sane man commit suicide?" There is no doubt of it. That nine out of ten of the recorded suicides are either actively insane, or bordering on madness, seems to me equally evident. With sane minds, the law of self-preservation is instinctive, but, against this, must be weighed the motive for suicide. Make the motive sufficient, and what you want is nerve, not insanity. Some men, in our time, have accepted the alternative of suicide, to that of a life of dis-

grace, stretching hopelessly before them, and have gone to their death, with as determined a purpose, and as free from any suspicion of insanity, as the three hundred at Thermopolæ went to their last repose. The history of the suicidal impulse in those actually insane, when carefully studied, shows, that, while generally it is the result of overpowering impulse at last, there is often evidence of a purpose, long cherished, and secretly brooded over, now laid aside, now taken up anew, never wholly abandoned, and, at last, with a favoring combination of opportunity and mental shadow, the dark spectre rises, the wavering instinct of self-preservation melts away, wife, children, all the fond ties of life, are forgotten in the mad plunge.

"Anywhere, anywhere, out of the world."

Illustrative cases of suicide are so familiar to all of you that I hardly need trouble you with them. I will give only two or three, for the lessons which they have taught me; indeed, all cases are instructive.*

I intended to give one other illustrative case, and its lesson, but the flight of time admonishes me to touch lightly on the case, and come to the lesson early. He was one of the most genial, pleasant, men I ever met, and he had been a successful Superintendent of a hospital for the insane. He broke down in health with acute melancholia, resigned his charge, and was, for months, under care in England. He returned unimproved, and, having a horror of the old association with New York City, he placed himself under the care of, and in the home of. a physician in Illinois. Years went by, and something of serenity and the old genial manner returned, and, while a shrinking from the publicity of the old life, and from contact with all strangers, remained, he was happy, at last in forgetting and being forgot. He left the home of his physician, and associated himself with his oldest son in the care of a sheep ranche. The former life and its troubles shut out, he was coming to a contented age in the pastoral style of the old patriarchs. Just then, a brazen reporter of the New York World, mousing after evil, one of the kind, who, had he lived in those days, would have scaled the walls of Paradise and interviewed Eve, after the fall, before she had got into her morning wrapper of fig leaves,—an interloper with no excuse, or business to be there, broke into the sheepfold, found out what he thought would be a first class sensation for his paper, and a day or two later, the first page of the New York World, with conspicuous headlines brought out the finding of Dr. Brown the former superintendent of the Bloomingdale Asylum, in hiding in an Illinois sheep pasture. The enterprise of that Satanic organ carries it everywhere. Dr. Brown saw, and read; it blotted out the sunshine of that new life, and brought back the horror of existence and its publicity. The next morning, he was found suspended, in his barn, and the proprietor of the New York World should have been indicted for manslaughter. For those familiar with the suicide record of the last six months, in our midst, it is not far to seek for the lesson of this case. Case after case, with its detail of horror in the sensational press of this city, only to be followed by other suicides, like an epidemic of suggested crime, have shown thinking people the true value of the yellow literature of the daily press in the family circle, dear, even at the exceeding low price of 1 cent per copy.

* The Editing Committee regrets the inability to print all the interesting cases reported by the author, but lack of space compels their omission as well as other parts of this interesting paper.

As physicians, we owe a duty to our patients, in endeavoring to avert the suicidal impulse. Called to a case of melancholia, we carefully inquire for evidence of that element in the case, warn the friends to be on their guard, remove all implements of death, and perhaps advise an early transfer to some hospital. All this is well, and to do less than this, knowing the danger, would be to fail in our plain duty to our patients. But is not this something like advising Colorado, or the pines of Carolina, after we find cavities in the pulmonary tissues? Is not the duty prior to this, to advise change of climate as soon as we detect hurried respiration and commencing dulness at the apex? As family physicians we should know the individual inheritance of the struma, or insane diathesis, and be on our guard for the first distant mutterings of the coming evil. Knowing the heredity of the individual, we are in the best position to comprehend how under the strain of living and the storms of fortune that beat on all, one stands as a rock, while the reason of another crumbles down, like the house that was built upon the sand. We should be familiar with the signals of danger that nature sends up, to warn us of impending break down to the nervous system, from sickness, overwork, or mental strain, a condition which we learnedly style neurasthenia, and know no more about it than before. We know, however, that these signals neglected mean exhaustion, physical prostration, mental wreck, and, often, suicide in the closing scene.

Neurasthenia is not confined to men, it is often incident to the hardships of a woman's life. In the struggle for existence, in the iron mills that grind modern life, what chance has a single woman? Or a married one, for that matter, if left a widow, obliged to rely on her own exertions, after middle life? The anxieties and daily cares of bringing forth, and bringing up, a houseful of children, caring for all the domestic details, which often include providing for a drunken husband, coming home late at night,—these things are what break down and send some of our women to suicide. When we consider the multiplicity of directions in which trouble may come to them, the wonder is, not that so many break down and lose their reason but, that so many keep it, go on, patiently, and bravely, to the end, "die, and make no sign," and on the headstone you read, "Sacred to the memory of so and so, beloved wife of so and so," and I observe there are apt to be two or three with similar inscription in the same lot, where, last of all, the man dies also.

Against the narrrow selfishness, and contemptible cowardice, of the suicide, who would leave wife and children to suffer what he shrank to longer endure, present by contrast, independence of character, and nobleness of life. So far as in you lies, by advice, and example, make life's aims high. Keep men who come to you for counsel out of the narrowing ruts of trade, and avoid making a trade of your own, the noblest, and most liberal of the professions; make money, but, in so doing, make those with whom you have to do worthier and happier, by your example.

DISCUSSION.

Dr. WOODWARD: From his experience as coroner, his opinions were in perfect accord with Dr. Godding's. He considered the suicidal act due mainly to nervous phenomena—that is, a sudden outbreak of the impulses which it is unable to resist, and to deliberate planning on the part of the person who commits the act; this latter distinction being particularly noticeable in the insane. He thought that enough stress had not been laid on the influence of alcoholism as a

factor in suicide. Many of the suicides, which have come under his notice are directly traceable to this cause through the general depression it produces on the nervous system. He found the influence directed immediately upon the persons themselves, and not on the children, as Dr. Godding stated.

Dr. GODDING replied to Dr. Woodward that undoubtedly a great many cases of suicide are directly the result of alcoholism; delirium tremens very commonly resulting in suicide. The weak brain of an alcoholic person readily gives way and he attempts his own life. But the point Dr. Godding wished to make was that the neurotic tendency is transmitted from sire to child. Religious influences also deserved consideration as affecting suicides.

Dr. W. W. JOHNSTON questioned Dr. Godding as to what proportion of suicides he thought could be traced to neurasthenia, to hereditary impulse and to brain injuries. Cases seen in general practice are almost entirely the result of neurasthenia, and if early treatment were instituted for this condition he believed many suicides could be prevented.

Dr. GODDING replied that suicide is in a large measure due to neurasthenia, and this class of persons with suicidal impulse is the worst to deal with. He knows of no statistics where such influences are classified, but thinks that one-fourth, at least, of the causes have a hereditary tendency.

Dr. BEHREND asked for Dr. Godding's advice with regard to sending patients of this kind to some proper institution.

Dr. GODDING said he was averse to taking everybody to an hospital for the insane merely because of suicidal tendencies. He recognizes change of scene as essential to recovery, but hesitates about sending patients to institutions because of the stigma associated with persons so confined.

MEETING OF APRIL 6, 1898.

The President, DR. S. C. BUSEY, in the Chair.

The Board of Censors reported the following practitioners eligible, and they were elected members:

Drs. Edmund Barry,
A. W. Boswell,
L. H. French,
George Winslow Foster,
M. Griffith,
A. Barnes Hooe,
M. D'Arcy Magee,
H. S. Medford,
Murray Gott Motter,
J. B. Nichols,
L. S. Savage,
Wm. Peyton Tucker,
James R. Tubman.

The following were elected by invitation:

Drs. Arther H. Glennan, U. S. M. H.
C. H. White, U. S. N.
J. B. Parker, U. S. N.
P. Fitzsimons, U. S. N.

The following were read and ordered filed:

WASHINGTON ACADEMY OF SCIENCES.
WASHINGTON, D. C., *April 1, 1898.*

DR. THOMAS C. SMITH,
Secretary.

DEAR SIR: I acknowledge with pleasure your favor of March 31, communicating the acceptance by the Medical Society of affiliation with other societies in the Academy.

It is provided by a by-law of the Academy that "one vice-president may be nominated by each affiliated society, subject to election by a majority vote at a meeting of the Academy." Under this provision the academy will be pleased to receive from the Medical Society a nomination for Vice-President. The person selected should be a member of the So-

ciety and the Academy. * * * *

Respectfully yours,

G. K. GILBERT,

Secretary.

WASHINGTON ACADEMY OF SCIENCES.

WASHINGTON, D. C., *April 1, 1898.*

DEAR SIR: I am instructed by the Board of Managers of the Washington Academy of Sciences to propose to your society an exchange of courtesies through notices of meetings. The notices of the scientific meetings of the Academy will be regularly sent to such members of the Medical Society as communicate through you their desire therefor, provided the same courtesy is extended to members of the Academy who, wish to receive notices of the scientific meetings of your society.

Yours respectfully,

G. K. GILBERT,

Secretary.

DR. THOMAS C. SMITH,

Secretary Medical Society, D. C.

Drs. Lamb, Kober and Burnett were appointed by the president a committee to nominate members of this society for membership in the Washington Academy of Sciences.

The special committee on the congratulatory resolutions to the President of the Society made the following report.

WASHINGTON, *April 6, 1898.*

TO THE MEDICAL SOCIETY OF THE D. C.

The committee appointed to draft resolutions of congratulation to Dr. S. C. Busey, on the completion of his fiftieth anniversary in the practice of medicine, respectfully submits the following:

Whereas Samuel C. Busey, M. D., L. L. D., President of this Society, will, in a few days, have passed through fifty years in the practice of medicine in this community, during which time he has faithfully served the Society as president, censor, member of important committees and in many other ways, and is now the only practitioner among us, who has been in practice so long a period. That he has always been prompt in maintaining the honor, dignity, rights and interests of the medical profession before Congress and the community. That his services in securing needed legislation for the protection of the public from ignorant and unlicensed practitioners; for the protection of physicians before the courts of law; for the prevention and spread of contagious diseases; and in advocating other measures, which he has furthered by his industry and influence, will ever be remembered.

Resolved, That this Society takes pleasure in calling the attention of its members to such a notable example of a career passed in the honorable and conscientious performance of the duties of life.

THOMAS C. SMITH,

J. FORD THOMPSON,

Committee.

ADENO-CARCINOMA OF THE STOMACH.

Dr. G. Wythe Cook presented a specimen of cancer of the stomach with the following history: patient aged 75, of robust constitution had previously enjoyed very good health barring some digestive disturbances and two rather severe hemorrhages from the stomach in the past six months. His third and last attack of hemorrhage from the stomach was very profuse, the quantity, which was shown me, amounting to a pint of clotted blood, which he had ejected a short time before my visit; he had, so I was informed, been vomiting much blood during the night.

On palpation there was a very perceptible tumor at the margin of the ribs on the left side, which had not attracted the notice of the patient and he seemed surprised when I called his attention to it. There were also some enlarged glands beneath the left st rno-mastoid muscle. He now complained of being extremely prostrated, and seemed unable to comprehend why he was so weak. The giving of some small pieces of ice and the administration of a few drop doses of Monsel's solution controlled the hemorrhage and there was no further vomiting of blood, though he several times passed dark tarry looking stools. He had no appetite whatever, but recognizing the importance of nourishing diet, he took the food prescribed for him, all of which he seemed to digest very well, though he did not gain any strength, and it was quite evident his disease was of a malignant character. The only medicine given him was some strychnia with dilute hydrochloric acid, and later, when his urinary organs became involved he had some salol. He gradually grew weaker and died. The result of the autopsy shows adenocarcinoma of the stomach.

PREVENTING OF MOUTH BREATHING.

Dr. Bermann presented two instruments for the prevention of mouth breathing and explained their use.

To be continued.

The Medical Society of the District of Columbia is responsible only for the "Transactions" published in this journal. It is entirely free from any connection with the Editorial and Business Management.

THE
NATIONAL MEDICAL REVIEW.

VOL. VIII. WASHINGTON, D. C., OCTOBER, 1898. No. 5.

Original Articles.

THE HIGH TENSION CURRENT IN THE TREATMENT OF NEURITIS.*

BY FRANCIS B. BISHOP, M. D.
Washington, D. C.

The treatment of Neuritis, as well as the treatment of all diseases should, as far as possible, be based upon a knowledge of etiology and pathology. There are certain structural changes in the nerves and the muscles supplied by them, that have been noted for many years and have been carefully copied and handed down by every author who has written upon this subject. It seems that, to discuss the subject of the treatment of disease from the standpoint of electrotherapeutics, it becomes necessary, not only to take into consideration the gross lesions, but to consider primarily the molecular changes that there is reason to believe are taking place in the centres in the brain or spinal cord; especially is this the case in neuritis when the disease comes on in consequence of the overpowering influence of alcoholic stimulants, inorganic poisons, as well as from the toxic effects of diphtheria, scarlet fever, small pox, &c., and from the infection of typhoid and malarial fevers, and other diseases which are well known to give a parting shot in the form of multiple neuritis. While traumatism appears to exert its influence upon the nerve or nerves injured, it does not seem unreasonable to suggest that a resulting neuritis is the direct product of molecular change in the centres of which these individual nerve fibres are but the continuations. These molecular changes are due to infection from the septic lesion; there is no evidence of an aseptic wound causing neuritis.

I have been unable to discover any positive evidence that such a condition ever existed as idiopathic neuritis; a cause exists, whether it can be found or not. We may take diphtheria as a type of disease commonly followed by neuritis, known to too many of us on account of pranks played by the toxines upon the nerve centres of our patients, often at a time when all appeared bright and hopeful. Who among us that have enjoyed a large general practice, has not been appalled by the sudden death of his pa-

*Read before the American Electro—Therapeutic Association at Buffalo, N. Y., Sept. 14, 1898.

tient, at a time when all seemed progressing favorably, due to toxic influences upon the cardiac and respiratory centres. Paralysis of the soft palate is a very common sequel as well as peripheral neuritis followed by paralysis and wasting of the muscles, more or less severe according to the intensity of the toxic effect upon the centres ; therefore the neuritis is of degree and not of kind, and depends for its location in the periphery upon the special centres attacked.

What is true of the toxines of diphtheria is true also of the toxines of other diseases, and the effects may vary according to the intensity and to the action of the special poison upon the centres in the brain and spinal cord.

Prof. Dolbear read a paper before this association in Boston in 1896 entitled, "The Relation of Physics to Physiology," from which the following facts are quoted: "The molecule of protoplasm is made up of a great many atoms of carbon, hydrogen, oxygen, nitrogen and other elements." And again, "The properties of atoms are not alike on different sides; they are allotropic or polarized, and when any given atom is turned around in a given compound, the resultant is changed by the configuration, not because the particular atom has assumed a different property, yet the molecule exhibits a different quality and may have a different function, and this is to be assumed of every atom of every combination." In the light of our present knowledge, we assume all physiological processes to be due to activity of atoms, or a rapid interchange of molecular elements. This activity is going on in all matter, therefore we would expect to find it in the nerve and muscular fibres as well as in the nerve centres themselves, and this is undoubtedly true; but it would be expected to be equally true that the "configuration" of the molecules in the gray matter of the brain and in the spinal cord centres is different from that in the nerve fibres, as the function of the one is to receive and transmit impressions, while that of the other is to carry these impressions to and from the centres. As we have seen, according to Prof. Dolbear, that all matter depends for its energy upon its atoms and molecules, and that "all the so-called organs of animal structures are composed of these complex energised molecules, and all physiological functions are but the steps by which this energy is changed from its more concentrated form to more diffused forms, and there is nothing in the whole line of phenomena but a series of physical and chemical reactions," so to change a physiological function to a pathological condition is only to inhibit the healthy activity of the atoms, in their interchange from molecule to molecule, or change the configuration by causing the atoms to change their position in the molecules. As all impressions are supposed to be carried to the centres before they are recognized by the peripheral nerves, so also all poisons in the system, whether from disease or other sources are carried to these centres, and as they are acted upon by the poison, the atomic activity is inhibited or a change of position in the molecules takes place, changing the functions of the molecules in the centres, therefore, instead of transmitting healthy physiological functions to the nerves and muscles, false impressions are received and transmitted, changing the molecular activity of every nerve and muscle under the jurisdiction of the centres involved. Therefore we have numbness, tenderness and pain, loss of motion and wasting of

the muscles with change of electrical reactions in the extremities, or, where the cardiac or respiratory centres are affected; sudden death quickly follows. If these facts are true, partially true, electricity, as a curative agent, becomes at once the most rational means of treatment.

As all physiologic and other energies are said to be due to atoms and molecules, so electrical energy must be due to the same prime cause and possess also the power of directing the movements of atoms, in water, in masses of protoplasm or other matter. Every writer whose work I have consulted upon this subject of neuritis, warns against the use of electricity in the early stages, and advises us to begin with a mild galvanic current of from two to five or six milliampères. These same authors will tell you that you may make sure of your diagnosis by testing for the reactions of degeneration. Now this cannot be done properly without causing discomfort, to a greater or less degree, in the healthy individual, and it is simply barbarism to irritate tender nerves with a small motor point electrode searching for reactions of degeneration. We find the same reactions in poliomyelitis, and should depend upon the other symptoms for our diagnosis. I am not prepared to denounce the use of the old reliable galvanic current in the treatment of these cases, for it can be used with great benefit when carefully and cautiously applied, but experience has led me to believe that we cannot get as good results as with a high tension current. Galvanism seems to have a selective action upon the protoplasm of muscles; this is evident, or said to be, from the fact that we get the degenerative reaction with the galvanic current when the nerve supply is cut off, and when we fail to get any responses from the current of tensions, while the faradic current is said to act directly upon the terminal nerves. In this disease, we are dealing primarily with nerve centres and nerve fibres, and it is through these, we hope to work—it is upon these we wish to exert the electric energy with the hope that we may stimulate to increased activity their molecular elements, and aid them to throw off the inhibitory influences of the toxines and to resume their physiological functions. The application of galvanism to the course of the peripheral nerve is accompanied by heat localized at the point of contact, accompanied by the accumulation of acids if the active pole be positive, and alkalies if the action of the pole be negative. If there is a change in the chemical reaction of a diseased nerve, it is due to a change in the atomic arrangement or activity in the molecules of the central organs, and to add more acid to an acid nerve is hardly a reasonable suggestion, and if an alkali is brought directly in contact with an acid nerve, we would naturally expect effervescence; in either case it would seem that an increase of pain would follow. These conditions might or might not occur, but are worth our consideration.

By the ordinary method of applying the galvanic current over the course of the nerve and to tender points and stimulating degenerated muscles, the pressure in voltage is quite limited, while the amperage is very great as compared with the high tension current. The galvanic current follows the course of least resistance and is most intense at the terminals where the work is done in overcoming resistance and while it follows the law that all conducting bodies within a reasonable area must become charged by induction before the direct lines of energy

assume their full intensity, yet the inductive activity of a mild galvanic current is very slight and must have a very limited effect upon the atoms and molecules in distant parts of the body. On the other hand, it has been demonstrated to this association by Dr. Elihu Thompson at Lynn, Mass., that the high tension current does not always follow the course of least resistance, and it is a common experience that the higher the tension, the more difficult it becomes to insulate the conductors, until we get to the high tension currents of our modern static machines, when insulation is almost out of the question. While the inductive capacity is very great, you cannot confine its influence; you may localize its partial effects at the terminals with the high tension coil, with the static induced, with the convective needle discharge, or with the ball and spark, but in each instance, the whole body is charged to the full potential of the machine, and for every vibration that passes between the electrodes, every atom and molecule in the entire body receives a corresponding vibration by induction, and this may be done so easily and comfortably, that the treatment is often a source of pleasure to the patient. I have never used the static spark in these cases, as the patients are usually very nervous and I have myself been rather timid, and afraid to subject them to what seemed to me to be a source of local irritation. The higher the voltage and the more rapid the vibrations, the less irritation we seem to have and the more decided the action seems to be in relieving pain. I know of no instrument for measuring the voltage of the static machine, but it is known to be very high.

In the February 12th number of the Western Electrician, there appeared an article taken from the Scientific American, describing an apparatus designed by Mr. John Trowbridge, which he constructed for the study of the discharge of electricity through gases, but he was unable to get results with so low a voltage. This is composed of 10,000 small storage cells from which he claims to get a pressure of 20,000 volts and eight ampères; this he afterward transformed into a very high tension current by the aid of the "Plant's Rheostat Machine." With this machine he claims to exalt his 20,000 volts to 1,200,000. He says: "I had at first intended to use this large battery in the study of electrical discharges through Crookes tubes, but I speedily found that X-rays could not be excited by a difference of potential represented by 20,000 volts. I found that at least 100,000 volts were necessary to produce them strongly." This gives me some idea of the voltage I use in these cases when it is possible to get them to a static machine. With the small Leyden jars connected by the discharging rod, my current is taken from a shunt on one side of the machine and from the prime conductor on the other, giving me a continuous discharge and sufficient to excite beautifully an X-ray tube, so, according to Mr. Trowbridge, I am charging my patient to the potential of nearly or quite 100,000 volts, and the current is uni-directional, with vibrations so rapid as to appear almost continuous.

One large surface electrode is placed so that it will cover all the cervical and several of the upper dorsal vertebræ; a suitable electrode is placed over the seat of pain or to the extremities affected; the machine is started and the spark gap gradually opened until the patient feels only slightly the vibrations. This treat-

ment continues for twenty minutes. The first patient treated by this method was a member of my own household, who had suffered with a succession of large boils under the arm and over the distribution of the brachial plexus; these left her with a neuritis affecting especially the musculo-spiral nerve. The pain was continuous and intense, and the arm was useless; in fairness to those who use the spark, I will say that I did not use it, but I did use every other method known to me with only partial relief, when it occurred to me the idea of using the high tension uni-directional rapid vibrations. The patient sat upon the chair in agony, and in five minutes was fast asleep. I will not detail cases, but will state that I have treated a number of cases of localized neuritis arising from various causes and always, so far, with perfect success. Several cases of multiple neuritis treated at the homes of the patients, with the high tension coils have been steadily improved. An interesting case was one treated with Dr. T. N. McLaughlin of Washington. The patient was a gentleman about forty years of age, rather a fast liver, and in addition to the neuritis, the liver could be felt as a hard resisting mass fully three inches below the lower border of the ribs; the abdomen was distended to such an extent as to render the breathing short and labored. This patient had tried the dry heat process and had resorted to Christian Science for some time; Dr. McLaughlin was called in and did all for him that medicine and sound professional advice could do, and I feel deeply indebted to him for his confidence and intelligent support throughout the treatment of this case, which was under treatment about thirty-seven days; at the end of this time, he was able to walk about, the pains in his feet and limbs had almost entirely disappeared, the liver was materially reduced in size and consistency, and the functions of the body seemed to be going on normally. A large electrode to the spine and another to the feet with treatment lasting from twenty minutes to half an hour. I would sometimes find him in intense agony and leave him entirely easy.

I have had a number of cases of greater or less intensity and have recently treated all, as far as possible, with the high tension current, and have now a severe case under treatment that is rapidly improving. After sensation returns and the pains and tenderness cease, I sometimes use a mild galvanic current over the muscles with very comforting effect. With the high tension current, notwithstanding the fact that the electrodes are placed upon the body so that the greatest density of current may flow between them, you may pick a spark from any portion of the body by touching the patient, so that not only the centres and nerve fibres in the course of the current are directly under its influence, but every atom of every molecule in the entire body is charged with an electric pressure of several thousand volts, and as they rapidly change under this pressure, they gradually throw off the toxic lethargy that has changed their functions and is healthy restored activity.

With my experience in the use of the high tension current, I sincerely hope no patient will be denied its use in the early stages of neuritis, or any stage.

THE NATIONAL MEDICAL REVIEW,

EDITED BY

GEORGE W. JOHNSTON, M. D., THOMAS E. MCARDLE, M. D.,

WITH THE CO-OPERATION OF

Charles E. Simon, M. D., Andrew Stewart, Ph. D., E. A. de Schweinitz, Ph.D., M. D.,
Edwin B. Behrend, M. D.,

AND

THE MILITARY SURGEON,

A SUPPLEMENT,

UNDER THE CHARGE OF

Colonel WILLIAM H. FORWOOD, Assistant Surgeon-General U. S. Army.

OFFICE: 1408 Twenty-first Street, N. W.

WASHINGTON, D. C., OCTOBER, 1898.

Notices and Reviews.

AN AMERICAN TEXT-BOOK OF GYNECOLOGY. Second Edition. Revised. Edited by J. M. Baldy, M. D., Philadelphia; W. B. Saunders; 1898. Cloth $6 net; Sheep or Half Morocco, $7 net. Sold by subscription.

Five years ago the first edition of this very practical work applied for professional favor and so well has its application been answered that a second issue has become necessary. The work embodies as nearly as possible the combined opinions of all the authors, although it is not understood that each individual author is responsible for every particular statement. The editor has, by adding to and subtracting from the text of each author's work, rendered the whole volume as uniform in its statements as possible. This renders the book more valuable than if it were merely a collection of signed chapters. A large number—more than forty—of the old illustrations have been replaced by new ones and it is a safe prediction to make that in the third edition some of the present pictures will be found wanting and their places taken by better ones. It is really a pleasure to commend this work as a practical help to physicians and students. It is a working text-book for the profession and will find a fitting place in the doctor's library as well as in the surgeon's office.

A TEXT-BOOK OF PRACTICAL THERAPEUTICS. By Hobart Amory Hare, M. D. Seventh Edition. Revised. Philadelphia. Lea Bros. & Co. 1898. Cloth $3.75; Leather $4.75.

Less than a year ago a review of the sixth edition of Dr. Hare's very valuable work appeared in this journal. The fifth edition which was three times as great as the fourth sold in two years, but the sixth sold in nine months. This is the best criticism that can be made of any book. It can be readily understood that the author derives great pleasure from the marked popularity of his work with medical readers. As was said in these pages last December: "Dr. Hare enjoys the proud distinction of being the author of the best text-book of practical therapeutics published in America to-day."

AN AMERICAN TEXT-BOOK OF THE DISEASES OF CHILDREN. Edited by Louis Starr, M. D., assisted by Thompson S. Westcott, M. D. Second Edition. Revised. Philadelphia. W. B. Saunders. 1898. Price $7 cloth; $8 sheep, or half morocco. Sold by subscription.

In the preface to this edition, Dr. Starr says that to keep up with the rapid advances in the field of pædiatrics and to round into a more perfect treatise the work so admirably accomplished by the various authors, the whole subject matter of the first edition has been carefully revised; new articles have been added; some of the original papers have been

emended, and a number have been entirely rewritten and brought up to date. One of the added chapters is on Modified Milk and Percentage Milk-mixtures. The material here gathered by Dr. Westcott will prove invaluable for reference by anyone interested in the subject of infant feeding. Dr. Moore of Minneapolis, the author of the well known text-book has added a chapter on Orthopædics, the study of which will make one wish for the doctor's own book on that subject. We have only words of praise for this second edition of a work which was already in its first issue a monument to the skill and industry of American pioneers in a field which had been so singularly neglected.

MANUAL OF CHEMISTRY. By W. Simon, M. D. Sixth Edition. Thoroughly Revised. Philadelphia. Lea Bros. & Co. 1898. Cloth $3 net.

Simon's Manual of Chemistry is too well known to need any additional words of commendation. Successive editions of this standard work follow each other with a rapidity significant of the esteem in which it is held as a text-book. It has clearly won a place at the head of the many volumes on chemistry offered to medical and pharmaceutical students. The author covers the ground succinctly and neglects nothing of importance. The set of plates giving the actual colors and color changes of sixty-four of the most important tests are both unique and admirable adding much to the value of the book.

A TEXT-BOOK UPON THE PATHOGENIC BACTERIA. By Joseph McFarland, M. D. Second Edition. Revised and Enlarged. Philadelphia. W. B. Saunders. 1898. Cloth $2.50 net.

In this second edition the author brings the work up to date in all departments of the subject by introducing brief mention of all that has been recently accomplished in bacteriology. New chapters have been added dealing with the bacteriology of Whooping Cough, Mumps, Yellow Fever, Hog Cholera and Swine Plague; describing the Bacillus aërogenes capsulatus and the Proteus vulgaris; and describing the Methods of Determining the Value of Antiseptics and Germicides, and of Determining the Thermal Death-point. The physician who graduated before modern science had thrown its light upon the etiology of disease will find interest and profit in studying these pages; though the book, of course, will find its proper sphere of usefulness in the hands of medical students.

A TREATISE ON THE SCIENCE AND PRACTICE OF MIDWIFERY. By W. S. Playfair, M. D. Seventh American Edition. Philadelphia. Lea Bros. & Co. 1898. Cloth $3.75 net; Leather $4.75 net.

True solid merit has won for this work the remarkable success of nine English and seven American editions. Practical English speaking physicians have from the first recognized the value of a clear, well illustrated and authoritative book at a moderate price. Obstetrics is one of the most progressive departments of medicine and frequent revision is necessary in any work which would adequately represent its present condition. This new edition of Prof. Playfair's famous book gives evidence of revision to date on every page.

A CLINICAL TEXT-BOOK OF MEDICAL DIAGNOSIS. By Oswald Vierordt, M. D. Philadelphia. W. B. Saunders. 1898. Cloth $4.00 net; Sheep or Half Morocco $5.00 net.

Just ten years ago Prof. Vierordt gave to the medical world his first edition of "Diagnostik der Innerer Krankheiten" with the avowed purpose of antagonizing the inclination of our time to theorizing. He took pains in his great work to emphasize the fact that the simple use of our senses, especially of the unaided eye, must not be forgotten, even when availing ourselves of the constantly increasing finer methods of diagnosis. The present edition in English is translated from the fifth German edition for which the author furnished advance sheets. This volume contains the material in abundance by the aid of which a physician can make himself an accomplished diagnostrician. Here again is great stress laid upon the fact that the foundation of a correct diagnosis must rest upon a careful examination of the individual organs, and then a study of the whole organism, the totality of the picture of the disease. For the present the author deems it best to altogether omit the application of Röntgen rays for the purposes of internal medicine, preferring to wait for the results of further developments.

Progress of Medicine.

BIOCHEMISTRY IN RELATION TO MEDICINE AND HYGIENE.

UNDER THE CHARGE OF
E. A. DE SCHWEINITZ, Ph. D., M. D.,
Director Biochemic Laboratory, B. A. I., Agricultural Department.

Normal and Diphtheria Serum.

The authors made a chemical study of the contents of normal and diphtheria horse serum. They found that the nucleo-albumins were absent both from the normal and curative serum. The curative serum contained about three-tenths per cent. more albumin than the normal serum. The difference in the quantity of globulin was not determined on account of the small amount, and the difficulty in isolating it. The specific gravity was found to be the same in both experiments. The freezing point of the curative serum was lower than that of the normal, and the amount of chlorine in the ash was less in the curative serum than in the normal. The electrical conductivity decreased also in the antitoxic serum. It would appear therefore that there is a lowering of the freezing point and a decrease in the electrical conductivity of antitoxic serum as compared with normal serum, and that as the amount of antitoxin in the serum increases these properties decrease. Although the total amount of albumin is somewhat greater in antitoxic serum than in the normal serum, no marked difference could be noted. Vergleichende chemische Untersuchungen über das normale Pferdeserum und das Diphtherieheilserum. Felix v. Szontagh, Oscar Wellmann. Deutsch. med. Wochenschr., No. 27. July 7, 1898.

An Animal Contracting Tuberculosis from an Attendant.

M. Huon, veterinarian in chief of the abattoir in Marseilles, presented also at this congress a report of what may be considered a very valuable experiment. He kept in an isolated place a cow which had been subjected to test with tuberculin the day upon which it had been received. The animal showed itself healthy in every particular, and no signs of tuberculosis were present. The employee who looked after this animal had been quite sick for some time and his sputum contained an abundance of tubercle bacilli, and he finally died from tuberculosis. Huon then injected the cow again with tuberculin and obtained a characteristic reaction for tuberculosis. The animal was kept for several months and finally killed, and the autopsy showed extensive tubercular lesions in the lungs. There was no doubt whatever but that the animal had contracted tuberculosis from the attendant, who had the habit of expectorating a great deal, especially around the stable. Un cas de contagion de la tuberculose de l'homme a la vache. Rec. d. med. vet., 5, no. 15. Aug. 15, 1898.

Immunization Against Mixed Diphtheritic and Streptococcic Infection,

The author undertook a number of experiments for the purpose of seeing if a serum could be obtained which would cure animals infected with diphtheria and streptococcus at the same time. He was led to undertake this work because in many cases of diphtheria the fact that the diphtheria antitoxin did not give good results was supposed to be due to streptococcic infection. At first rabbits were injected with a mixture of the diphtheria toxin and of the streptococcus toxin. The reaction appeared to be about the same as that obtained when diphtheria toxin alone was used, but the immunization was very much slower, and the results were very unsatisfactory, while considerable quantities of diphtheria antitoxin could be obtained in serum of animals treated with these mixed

poisons, a practically inappreciable amount of streptococcic antitoxin was found in one animal only. Somewhat better results were obtained if cultures of the streptococcus were used in addition to the mixed cultures. As the rabbits appeared unsatisfactory, a goat and a number of guinea pigs were then used, and the most satisfactory results were obtained by the injection of the mixed diphtheria and streptococci cultures. The serum from guinea pigs treated in this way showed the presence of very small quantities of antitoxic substances, both for diphtheria and streptococci bacilli, and by the use of this mixed serum upon animals infected with diphtheria alone or with diphtheria and streptococci, the authors were able to demonstrate that in many cases the products of the streptococci are probably responsible for the unsatisfactory results when the patient does not respond to an injection of diphtheria antitoxin. Ueber Immunisirung von Versuchsthieren gegen die Mischinfection mit Diphtheriebacillen und Streptococcen. J. Bernheim. Arch. f. hyg., 33, hft. 1, 2.

Effect of Digestive Fluids on Toxins.

The authors have studied the effects of the enzymes upon diphtheria and other toxins. The first experiments were made with the pancreatic juice obtained from dogs, and were made upon dogs. As the pancreatic juice used was obtained principally from dogs which had been fed upon milk, trypsin and the fat decomposing enzymes were of course the principle ones present. The digestive fluid was filtered through chamberland tubes in order to free it from bacteria, and in this way of course a portion of the enzyme was lost. As is well known, dogs are very susceptible to diphtheria toxin. Two experiments were made. A healthy dog weighing about 8.8 kilogrammes was given subcutaneously 0.2 gram of diphtheria toxin. The next day there was infiltration at the point of injection, which on the fourth day, appeared as an open ulcer. The dog did not eat, and on the fifth day showed a temperature of 35 degrees centigrade, and finally died on the sixth day from diphtheria. Another dog weighing 5.6 kilogrammes was given 0.4 gram of the same diphtheria toxin, which, however, just before the subcutaneous injection, had been mixed with one gram of pancreatic juice. The animal remained healthy, had no infiltration at the point of injection and began to increase in weight on the day after injection. The experiment was repeated with the same results. The dog that received the injection of the diphtheria toxin mixed with pancreatic juice remained well, while the check animal died. Similar results were obtained when pancreatic juice was used both in rabbits and guinea pigs. Gastric juice was however less active, and did not as readily destroy the diphtheria toxin. The possible effect of the acid or alkaline character of the digestive fluids used upon the destruction of the toxin was noted, and it was found that the results were the same whether the digestion took place in neutral, acid or alkaline fluid. The effect of pancreatic juice upon tetanus toxin was also tried. Out of 14 animals inoculated with a mixture of tetanus toxin and pancreatic juice, which mixture had been allowed to stand for some time, either at the room temperature or temperature of the incubator, 10 died and only 4 recovered. Gastric juice had a somewhat stronger influence upon the tetanus toxin. It is well known from many experiments that the gall has a very marked influence in increasing the activity of pancreatic juice, and by using a mixture of .06 gram of pancreatic juice and .02 gram of gall, it was possible to destroy the fatal effect of a dose of tetanus toxin ten thousand times stronger than would be necessary to kill the animal. From this we can see in what a wonderful manner the animal organism is enabled to protect itself in its intestinal tract from bacterial toxines. Bacteria are always present in the digestive tract, and those that are not destroyed or weakened by the digestive fluids, develop in the intestines, and produce a number of different substances, many of which, as indol, skatol, methyl, mercaptan, etc., have

been isolated. The danger of intoxication from these substances in the intestines is counteracted by the action of the digestive fluids. The destruction of the poisonous effect of bacterial toxines by means of the digestive fluids, explains, why pathogenic bacteria which produce active toxines are not injurious when they enter the intestines of healthy men and animals. The action of these ferments, however, is not an immunizing one, as if guinea pigs are injected upon one side with diphtheria toxin and upon the other with pancreatic juice they die from diphtheria. The enzyme must act directly upon the toxin, and the longer this action is possible before the injection is introduced into the animal, the better would be the results secured. A very minute quantity of the enzyme is sufficient to destroy a very large quantity of the bacterial toxins. Die Entgiftung der Toxine durch die verdanungssäfte. M. Nencki, N. Sieber, E. Schoumow-Simanowski. Centralb l f. bakt., 23, no. 20, June 1, 1898.

Identity of Avian and Human Tuberculosis.

At the fourth congress of tuberculosis held in Paris, July 27–August 4, 1898, Nocard, the distinguished French veterinarian reported the results of some experiments, which aid in establishing the fact that the germ of human and avian tuberculosis are races or varieties of one and the same species. The majority of experimenters in testing the virulence of the avian germ with reference to mammals, have made subcutaneous inoculations in guinea pigs, and ordinarily these inoculations, made from material derived from birds, have not developed tuberculosis. The rabbit on the contrary seems to be equally sensitive to the human and avian germ, and after several passages through this animal, the lesions produced are identical, whether the one or the other germ is the source of disease. In order to establish the relationship between these two germs more thoroughly, Nocard made use of an experiment similar to that which had given him such satisfactory results in isolating the germ of pleuro-pneumonia. Cultures of human tuberculosis were made upon glycerine bouillon, placed in hermetically sealed collodion sacks, and these sacks were introduced into the peritoneal cavity of a chicken. Changes took place very rapidly between the contents of the sack and the fluids of the body of the chicken, which modified the composition of the nutritive media very materially. The tubercle germs enclosed in the sack lost little by little their special characteristics, and when they had remained a sufficient time in contact with the organic fluids of the bird the special properties of the human germ had entirely disappeared. The characteristics of the cultures obtained from the germ in this way are practically identical with those of the avian tubercle germ. Nocard concludes that if the simple passage through a fowl is sufficient to produce marked modifications, the human and avian tubercle germ can only be two varieties of one and the same species. (This agrees with the conclusions that have been arrived at by other workers, that the tubercle germ adapts itself to its surroundings, either inside the body of various species of animals, or outside of their bodies upon various culture media. While the germ derived from individual animals may exhibit some differences from those derived from other animals, these differences are not sufficient to warrant the assumption that the germs belong to entirely different species and the differences disappear in the course of cultivation in or outside the animal body. E. A. de S.) Identité des tuberculoses humaine et aviaire. Rec. d. med.vet., 5, no. 15. Aug. 15, 1898.

Therapeutic Notes.

Chlorosis.

Dr. H. Edwin Lewis, Resident Physician Fanny Allen Hospital, Burlington, Vt., has recently written a very interesting article on Irregular Menstruation in Young Women due to Anæmic Conditions. In speaking of treatment he says, since manganese has grown in favor as an adjuvant to iron, a new preparation has been submitted to the medical profession, and in every way has proven itself an ideal one. He refers to Dr. Gude's preparation of the peptonate of iron and manganese, known as Gude's Pepto-mangan. It should be given in water or milk in teaspoonful doses after meals, and its administration is invaribly followed by the results desired.

Anæmia.

From the Sound View Hospital at Stamford, Conn., comes the report of a case of anæmia cured by Bovinine. The patient suffered from general malnutrition; her blood was profoundly lowered in quality, and all the usual symptoms of a well defined case of anæmia such as pale gums, waxy complexion, loss of flesh, and general functional disturbance were present. Her nights were made agonizing by neuralgia. The treatment was commenced with twenty drops of Bovinine hourly in iced lime-water. Two days later a rectal injection of three ounces of Bovinine and five of milk was given and retained. Neuralgia improved. A drachm of Bovinine in milk and lime water was now given every two hours and an enema of two ounces of Bovinine and four of milk at night. Treatment continued for two weeks when improvement was so far advanced that the rectal injection was discontinued and a tablespoonful of Bovinine in old port wine alternated with milk every three hours. Later the dose was increased to a wineglassful of bovinine in milk every three hours and in ten days the cure was pronounced complete and the patient was discharged.

Engorgement of the Cervix.

The Kansas City Medical Record says: Micajah's Medicated Uterine Wafers made by Micajah & Co., of Warren, Pa., have given great satisfaction in the hands of many practitioners. In cases of engorgement of the cervix-uteri they afford marked relief; in fact in all inflammatory conditons, they are highly beneficial, and in cases of endometritis decided improvement has been reported from their use. One advantage in this treatment is the ease of application. Send for sample.

Iodoform and its Substitute in the Treatment of Phthisis.

At a meeting of the American Med Association last year it will be remembered that Dr. L. F. Flick, of Philadelphia, reported a number of cases of phthisis, in which considerable improvement had been derived from the use of iodoform and especially of Europhen, employed chiefly in the form of inunctions.

Dr. Edward O. Otis, of Boston, (Boston Medical and Surgical Journal, July 21st), discussing the modern methods of the treatment of phthisis and its symptoms, also emphasizes the value of iodoform, either used as such or in the form of its substitute europhen. He remarks that as far as evidence has accumulated regarding it, its chief effect appears to be an improvement of the appetite, increase in weight and a diminution of the cough. According to Ransom who is careful in his statements, it is one of the best of the medicines that can be given for the purpose of assisting nutrition and alleviating cough.

Acute Inflammation of the Prostate Gland.

The Journal of the American Medical Association, for August 20th, contains a report on inflammation of the prostate gland, which was presented to the Section on Surgery and Anatomy at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898, by Liston Homer Montgomery, M. D., of Chicago, Ills. His plan of treatment in acute inflammation of the prostate gland is to wash out the abscess cavity with hydrogen peroxid, give copious hot

water enema and hot hip baths frequently, avoid morphine internally and advise care lest the patient strain at tsool or during micturition. On the theory that toxins are retained in the circulation and within the gland, and to prevent degeneration in the gland substance, he administers triticum repens or fluid extract tritipalm freely, combined with gum arabic or flaxseed infusion. Along with these remedies the mineral waters, particularly vichy with citrate of potash, go well together. Hydrate of chloral or this salt combined with antikamnia are the very best anodyne remedies to control pain and spasms of the neck of the bladder. These pharmacologic or medicinal remedies are the most logical to use in his judgment; while externally, applications of an inunction of 10 or 20 per cent iodoform, lanoline, as well as of mercury, are also of value.

Instructive Exhibits.

"One of the chief attractions at the annual gathering of the American Medical Association is always the exhibition hall, where the principal drug, instrument and food products of the world, the results of years of experimental research and labor, are placed in view.

"Among the many attractive exhibits at this year's Denver meeting, that of Imperial Granum, recognized by many leading physicians as the standard among prepared foods, occupied a prominent space and the representative in charge was kept busy explaining to the visiting physicians the superiority of this preparation. Handsome sample boxes of the food, and copies of The Imperial Granum Co.'s valuable clinical record, were presented to each physician in attendance."—From the Journal of the American Medical Association, Chicago.

Deimel Linen-Mesh.

Dr. Melville Black, Laryngologist, Denver, Col., thus writes to Dr. Deimel under date of March 14, 1898: I am pleased to say that having given Deimel Linen-Mesh underwear a personal trial for over a year, and having had some fifty patients under observation who have been wearing it over a year, I am prepared to state that it has given universal satisfaction. The old idea that wool is the only protection for the skin is exploded. In my opinion the skin, to perform its functions normally, needs but little such protection.

Inflammation of the Naso-Phanyrx.

There is one remedy which is used extensively in the treatment of inflammatory affections of the mucous membrane of the nose and throat. It contains benzo-boro-phenic acid combined with the medical properties of pine, cubebs, thyme, eucalyptus and mint, which are held in solution by a chemically pure oil of petroleum. This remedy, Firnol Comp., is an active antiseptic agent and is usually administered without dilution; but when the mucous membrane of the upper air passages is abnormally sensitive, albolene or blancoline may be added to it.

Sanmetto.

J. S. Jordan, M. D., of Indianapolis, Ind., writing, says: "I have been using Sanmetto for a number of years, and with unvarying good results. In cases of prostatitis, prostatorrhea, cystitis-chronic gonorrhea, and kindred genito—urinary troubles I find it one of the most valuable acquisitions to our Materia Medica. In irritable conditions of the neck of the bladder, so frequent among females, Sanmetto has proven a God-send. I can also heartily recommend it as the very best aphrodisiac I have ever used."

Rome, Italy.

I have recently prescribed Dr. McArthur's Chem. Pure Syrup at my dispensary, with remarkably satisfactory results. A lady with evident symptoms of laryngeal phthisis, who came to Rome for treatment, was ordered to take McArthur's Syrup. She is now in the way of full recovery. DR LUIGI.

TRANSACTIONS OF THE MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA.

EDITING COMMITTEE:

W. W. JOHNSTON, M. D., GEO. M. KOBER, M. D., JAS. D. MORGAN, M. D.

MEETING OF APRIL 6, 1898. Dr. S. C. Busey, President, in the Chair.

(Continued.)

DR. CHARLES W. RICHARDSON read the essay for April:

ACUTE MASTOID ABSCESS.

Historical.—The operative opening of the mastoid cells was first suggested (in 1649) by Riolanus, and strange to narrate. it was then proposed by him for the purpose of relieving deafness and tinnitus aurium due to the closure of the Eustachian tube; and not for the purpose of removing pus, and carious or necrosed bone. Rollfink in a dissertation published in June in 1656, echoed his suggestion and advocated the operation. Von Tröltsch gives J. L. Petit the credit of having performed the first operation (1750). A German military surgeon by the name of Jasser, was the first to place the operation before the medical world in such a manner as to give it attention and place it upon the plane of a legitimate surgical procedure (1776). Jasser's operation was done for a typical mastoiditis and not for the relief of deafness. J. Arneman, a professor in the University of Gœttengen, published in 1792, "Bemerkung über die Durchbohrung des Processus Mastoideus in gewissen Fällen der Taubheit," in which he describes cases operated upon and laid down the indications for the operation. The operation was brought into great disrepute, about this time, in a minor degree through the unsuccessful results obtained, but largely through a fatal result in the attempt to relieve the deafness in the celebrated case of Baron Dr. von Berger, physician to the King of Denmark. Von Berger had the operation done to relieve him of his deafness and tinnitus, which was unfortunately followed by a fatal termination through meningitis. The fatal issue in von Berger's case caused the operation to be abandoned for a number of years. In 1849, the operation was again resorted to by Forgit with a favorable issue and a few years later von Tröltsch recalled attention to this abandoned procedure and advocated its renewal in appropriate cases. In 1861, Turnbull reported a successful case, the first to be performed in America. In 1863, Hermann Schwartze reported his first case and from this time on the operation rapidly gained ground in adherents and frequency of successful termination. It is strange that an operation so beneficient in its results and so sound-

ly suggested by all known rules of surgery should have been allowed to remain dormant so long. It is no doubt that the honor of establishing the mastoid operation as a legitimate surgical procedure is largely due to Schwartze's efforts. Through his exhaustive work in this line, and through his publication, with description of the anatomy and pathology, and indication for the operation, as well as, method of precedure in performing the operation, he more than others placed the operation above question.

It would lengthen out my paper to too great an extent to enter into an extensive anatomical and pathological description of the mastoid; and I will, in discussing this subject, hereafter, only mention these when it becomes necessary for the elucidation of the point under discussion. Sufficient be it to mention that the mastoid process is composed of a number of cells, separated from each other, yet communicating with one another, and containing one large cell which is known as the antrum, this latter communicating with the atrium or cavity of the tympanum through a small canal which is known as the aditus ad antrum.

Mastoiditis occurs under two forms, viz: The form of mastoiditis resulting from acute inflamation of the middle ear, and the form of mastoiditis resulting from chronic inflamation of the middle ear. The ætiological factors in the causation of acute mastoiditis are the acute inflamations of the middle ear, viz: Simple acute inflamation; acute suppurative inflamation; influenza otitis; and suppurative otitis resulting from the acute exanthemata, as scarlet fever, measles, diphtheria; tuberculosis and syphilis. That many cases of suppurative inflamation of the middle ear terminate in a mastoid abscess is no doubt due to neglect or bad management. Delayed or neglected paracentesis play an important role as causative factor. There is no doubt that in many cases of suppurative otitis, as originally pointed out by Politzer, there is pus within the cells of the mastoid. The presence of the pus does not indicate that the cells are involved in the inflamation, for Politzer clearly points out that such pus is frequently present without the mucosa or the osseous trabeculæ of the mastoid cells being inflamed; nevertheless, if we have this pus, reeking with micrococci, long retained within the cells, under pressure due to an imperforate membrane, we shall soon have a participation of these parts and a mastoidal abscess. Therefore, the urgency of early paracentesis and its delay as a causative factor in mastoidal abscess. The anatomical variation in the calibre of the aditus ad antrum and between the communication of the antrum and cellular mastoideus often give rise to mastoidal inflamation in the acute type of suppurative otitis. These passages are occasionally so narrow as hardly to permit the passage of the smallest bristle. As long as the cells or the antrum are in the normal condition these narrowed passageways are sufficient, but when the mucosa thereof becomes inflamed and swollen, the egress of pus is completely shut off and abscess formation rapidly results. I have operated upon two cases in which the resulting abscess seemed to have been due to this narrowing of the aditus or the communication between the antrum and the cells. In case No. 6 an acute suppurative otitis of mild type rapidly resolved under judicious treatment. A few days after the suppuration had ceased and the perforation closed, the patient commenced to have pain over mastoid region and increase of temperature. I saw the patient after several

days of pain and fevers and on examining, found membrane closed with only a mild degree of injection at upper pole. Ten days after closure of membrane, cells were opened and found broken down and full of pus. Case No. 10 presents many of the same characteristics. The case came under my care after four weeks of intense pain and suppuration. Membrane liberally opened and one week thereafter perforation closed; ten days later, mastoid opened and found extensively disorganized. That form of perforation seen at the posterior superior quadrant is the type of perforation which I most dread to see in acute suppurative inflamation of the middle ear, as in my experience it is that type of perforation which has most frequently been attended with a secondary mastoiditis—Atresia of the auditory canal and polypoid development from membrane or tympanic cavity, as complications of acute suppuration by their obstructive influences, are potent agents in the production of mastoiditis.

Symptoms.—Pain in the mastoid region is one of the most constant and characteristic symptoms of mastoidal abscess. This pain is spontaneous and unremitting and is intensified by pressure made over the mastoid region. The symptom is always greater at night as is characteristic of all pain of osseous origin. With this pain localized over the diseased area, we have associated therewith neuralgic pain radiating up over the forehead and backwards over the occiput. The sensitiveness to pressure is often great, the simple laying on of the finger over the seat of the antrum mastoideum causing the patient to flinch with pain and draw the head away. In testing for this exquisite sensitiveness of the mastoid as a diagnostic sign, it is well to make the pressure only over the seat of the antrum. Tenderness at the apex of the mastoid indicates practically nothing as it is quite as frequently present in simple suppurative cases as it is in mastoidal involvment. Intense pain and exquisite sensitiveness over the antrum of several days duration can be taken as a very strong presumptive evidence of mastoid disease; although the absence of both with other pronounced symptoms does not negative the existence of such a condition. Case No. 14 illustrates the above observation markedly. A young child of fourteen years of age had a suppurative otitis of several weeks duration with all the characteristic evidence of mastoidal involvement, excepting that of pain. Child slept well and complained of no pain. Pressure over mastoid was painless. Cells opened and found completely disorganized and full of pus.

An elevation of the bodily temperature above the normal is nearly always present. This elevation of temperature may be very moderate, not exceeding more than a half to one degree above the normal. Politzer states that he has often noticed that the temperature was greatest over the diseased mastoid. I have never made a test of this symptom and cannot, therefore, give a personal verification of its worth. A normal temperature does not negative the possibility of pus being present in mastoid cells. Case No. 21 had an absolutely normal temperature, yet the cells were completely disorganized and the process destroyed even to the tips.

Sinking of the posterior superior wall of the osseous auditory canal is another evidence to which much importance can be attached. Remembering that the deeper portion of the posterior wall of the osseous auditory canal forms the anterior wall of the mastoid cells and that the shelf of bone forming the superior

wall of the canal is composed of pneumatic cells in communication with the attic and cells of the mastoid region, we can readily understand how important an evidence the sinking of these walls are of involvment of the mastoidal region. Profuse discharge of pus from the ear is often present in mastoidal suppuration. Swelling and œdema of the soft tissue very strongly points to an inflammation of the osseous structure over which they lay. This infiltration of the soft tissue over the mastoid region rarely takes place until the cells just beneath the cortex or the cortex itself is involved and the pus is about to force an egress through the outer wall of the mastoid. Redness of the skin over the mastoid is rarely present until the pus has already made its way through the cortex of the mastoid.

The diagnosis of the mastoid abscess is made from the ensemble of symytoms and the history of the case. The presence of great pain over the mastoid and tenderness to pressure over the antrum several days in duration, in a case in which there has been a suppurative inflamation of the middle ear which is not relieved by thorough antiphologistic treatment and in which the temperature is above normal, would be a case in which there was a strong presumptive evidence of cellular involvment. Should these symptoms continue without abatement for the period of a week, I should judge one justified in operative interference. Case No. 20 gave only the symptoms as indicated above. On the third day after the patient came under observation, I opened the cells and found them completely disorganized. If to the above indicated symptoms, we have either one of the following symytoms, viz: sinking of the posterior wall of the meatus, high temperature with nausea or vomiting, œdema or redness over the mastoid, I should not hesitate in my diagnosis or in a decision as what course was best to pursue. Pain may be absent yet other symptoms may give such a positive picture as to make the diagnosis easy.

In every instance the history of the case, the condition of the auditory canal, the membrana tympani, the mastoid evidence, and the subjective symptoms of the patient, as evidenced by nervous excitement, irritability and pain should be carefully weighed before the diagnosis is made. In this connection, it is well to call attention to the fact that all the evidences of abscess formation may apparently subside, as pain, swelling, temperature, etc., and yet the destructive process still be latent, to be actively manifested some days later, by a sudden onset of all the symptoms again in a decidedly energetic manner. This fact should be sufficient to make one cautious in keeping those cases of seemingly arrested mastoid abscess carefully under observation for a long time after all active symptoms have subsided.

Treatment.—When evidence of mastoiditis is present but in which pressing indications for operative interference are not imperative, it may be possible through well directed antiphologistic treatment to arrest the change in the cells and bring about a resolution without resorting to formal operation. The patient should be put to bed and the bowels well opened. The opening in the membrane, especially if it be through a titlike perforation in the posterior-superior quadrant, or if of very inadequate size, should be well laid open. Granulations or polypoid growths should most thoroughly be removed if present. The Leiter coil or the Sprague ice bag should be uninterruptedly applied to the mastoid; and Milligan's method of washing out the middle ear cavity with warm

boracic acid solution or sterilized water should be resorted to. The method of Milligan's is the washing out the middle ear cavity through the eustachian tube through the medium of a catheter. If during a couple of days of this method of treatment the symptoms do not abate sufficiently, or if while carrying it out the symptoms seem to be intensified, immediate resort to operative interence should be made.

Operation.—The operation should be done in as thoroughly aseptic manner as possible. The patient should be thoroughly prepared as in any other surgical procedure. In male subjects it is well to shave the head thoroughly, removing all the hair, and give the head a thorough aseptic treatment. In female patients, on account of the importance of this adornment, it is not always necessary to remove all the hair. In females the hair can be removed thoroughly two inches above the auricle and for a similar space posteriorly to it, the remaining hair being well bound to the non-operative side of the head. Sometimes on account of exquisite tenderness, it is not necessary to remove the hair around the operative field until the patient is well anaesthetized. The field should be well washed with soap and water and bathed with ether. The instruments should be prepared, and the surgeon and his assistants should prepare themselves in a most thorough anti-septic manner. It is not necessary to go into all aseptic details in the performance of this operation as they are the same as should govern a careful surgeon in doing any operation upon the human anatomy. The instruments which are required are as follows, and they should be thoroughly sterilized: scalpels for incising the wound; half dozen or more hæmostatic forceps; a couple of four-pronged, long-handled retractors; periosteum scraper; half dozen gouges of varying sizes; mallet; trephine and drills; sharp spoons; periosteum forceps and forceps for removing pieces of bone; curettes for removing growth from auditory canal; ear speculum and snare; needles; ligatures; several probes; knee forceps.

In my list you will observe that I include trephine and drills. I will also state that I frequently make use of them and find that they are of great practical use in many of the acute mastoid cases, especially where the pneumatic cells fill out nearly the whole contour of the process. When carefully and properly used, I can see no more danger in their application than I can in that of a chisel or gouge; and in appropriate cases, I find that they far excel the gouge or chisel. I feel that a good aural surgeon should be capable of using trephines, gouges or chisel with the same skill and freedom from danger. Whenever the cortex of the mastoid is sclerosed, I always use the gouges. In those cases I spoke of above I use the trephine.

In this description, I shall first describe the typical mastoid operation. The surgeon should have capable and good assistants—an anaesthetizer in whom he can place absolute confidence; a first assistant to aid in the various operative steps; a third to take care of instruments; and a well-trained nurse to attend to solutions, cotton, dressings, etc. The operator should at the moment of commencing the operation, glance around and observe that everything is in place and that all assistants are ready. The incision of the soft parts should be made with a good, strong scalpel and the primary incision should extend completely through the soft tissue down to the bone. This incision should commence on a level with the tip of the auri-

cle and extend in a slightly curvilinear manner parallel to the insertion of the auricle to the tip of the mastoid, about one-eighth of an inch from the insertion of the auricle to the side of the head. Bleeding points should now be taken up with forceps and when of sufficient magnitude, should be tied and artery forceps removed. The periosteum is now thoroughly removed over the whole anterior portion of mastoid region and the bone well exposed. By this thorough removal of the periosteum we have nothing to fear as most of the denuded bone will be removed in the subsequent operative procedure. By this means we expose the osseous meatus, the spina supra meatum, and the linea temporalis. We now dry the wound thoroughly, stop all blood, and are prepared to attack the bone. At this point, it is well to locate the antrum mastodeum and the facial nerve and horizontal semi-circular canal; the route to reach the former without injury to the latter. The most important landmarks are the linea temporalis, a ridge formed by an extension backwards of the zygomatic process, and the spina supra meatum. The former, in the greater majority of cases lies, lower than the middle cerebral fossa and in a few, on a level with it; we must therefore be careful in opening the bone not to commence above the line. Bezold states that the spina is a little higher than the floor of the antrum. Should neither of these landmarks be present, we can by letting fall perpendicular and horizontal lines tangent to the external meatus readily determine our starting point. Having located our point of attack, we commence by slowly chiselling away the bone in their successive layers, gradually deepening our canal with an inclination forward and inward. One should hug the posterior wall of the osseous auditory canal so as to avoid as much as possible an injury to an anteriorly placed sinus, and due care should be taken to prevent working backward. Gradually working in in the manner indicated, deepening our conical canal by removal of successive layers of bone, we soon find that we have reached the neck of the antrum. In sinking our conical canal, we must be careful to keep the apex of the canal well above the level of the spina. Having reached the antrum and demonstrated it by passing a probe into the tympanum, the entering of it is proof positive of our success. Having accomplished the entrance of the antrum, we can proceed to remove broken down tissue and diseased bone with gouges, spoons or curettes. The question of how far we can in safety penetrate in case we do not strike the antrum is quite an important question. In following out the line of sinking a conical canal according to the above routine, if we do not come upon the antrum after sinking the canal about the distance of the membrane from the meatus, measured along its posterior superior wall, we should direct the apex towards the meatus so as to enter the attic from whence, with a guide, we can chisel backward into the antrum. This is the typical mastoid operation briefly described, which varies under varying circumstances and must be modified according to the circumstances presented in individual cases.

Operating upon a pneumatic mastoid is decidedly more pleasant, easier and safer than working upon a sclerosed bone. Often after making the primary incision through the soft tissues, we find the cortex, from its bluish, softened or discolored appearance, giving evidence that the pus is just beneath the surface of the bone and that the process is composed of one broken down mass of necrosed tissue and pus. In this case the

operation is extremely simple and requires only a puncture with the trephine over the selected point in order to gain entrance to the cavity with evacuation of its contents. The opening can be enlarged to sufficient size with the gouge chisel and the necrosed tissue removed with a sharp spoon. I always, even in these cases, make sure that I have exposed the antrum and made my connection with the middle ear.

Again after making our cutaneous incision through a thickly infiltrated mass of soft tissue, we will find pus issuing from the bottom of the wound. The pus and blood should be cleaned away, as before, and the fistulous opening sought for through which the pus makes its egress. Unless this opening is quite posteriorly located, it is wise to enlarge the opening with the trephine and then proceed as indicated above. Occasionally in operating, we will find that the cortex appears quite normal and it is only in reaching the cells that we find sufficient evidence, as shown by slight congestion, to warrant us in proceeding. In this case, we may only find a few drops of pus which is contained only in the deeper cells, the antrum or near the tip of the mastoid. In all cases, therefore, after the cortex is removed, the operator should not desist until the antrum is reached and the tip is explored as it may only be in these points that he will find the actively diseased area.

The condition of the auditory canal should always be known before the operation is begun. Pus should be cleared from it and a dry tampon of sterilized cotton inserted and retained during the operation. Should granulation or polypi be present they should be removed immediately after the major operation is finished and before dressings are applied thereto. I always prefer the ring knife for this purpose as usually with one well directed attack the whole growth can be removed. If the wound through the soft tissue is very long, it can be drawn together by a stitch above and below. The cavity should be dried of blood and lightly packed with iodoform or other sterilized gauze, a packing of several layers of gauze, and over this some sterilized absorbent cotton and all retained by a well applied roller bandage. Dr. C. J. Blake of Boston, in some of his more recent acute mastoid operations, has attempted to gain primary union by allowing the bone cavity to fill up with blood and then closing up the wound through the soft tissues. His results are good in a few cases and certainly warrant one in following his illustrious lead. As Blake says, if you do not get primary union by this method, you are, when the dressings are removed, in as good position as you would be had not the attempt been made. If the blood has not organized but broken down, you have only the stitch to remove and the wound to heal by the usual method.

Remarks.—In doing this operation, I believe we should be as thorough in our procedure as in all surgical work, bold but yet conservative. The opening through the cortex should be large, as small canals are a snare and serve to render the subsequent treatment of the wound painful and tedious. The edge of the cortical wound should be smoothed around and sharp spicula of bone should be chiseled off and removed. The cavity should be thoroughly curetted out and all suspicious and soft bone well removed. The primary dressing should be allowed to remain intact from five days to a week unless it becomes moistened through or there should be an elevation of temperature. Subsequent dressing should be made as often as the

case demands. The duration of the after treatment varies from three to five weeks, depending largely upon the amount of tissue removed and the thoroughness with which the operation is done. The suppurating tympanic cavity rarely causes any subsequent attention as all secretion of pus in the tympanum usually ceases with the completion of the mastoid operation. I consider the mastoid operation one of the most resultful operations; almost devoid of danger in itself to life; and as productive of as great relief from pain and suffering as any operative procedure done upon the human organism.

The two points to be avoided in the operation are the opening of the lateral sinus and the injury of the facial nerve. The opening of the lateral sinus can be avoided in a majority of the operative cases by keeping well forward in sinking our conical canal. In sclerosed mastoid is this danger to be feared to a greater extent than in the pneumatic mastoid, therefore, we should be more upon our guard in operating upon the former class of cases. In cases where the sinus is directed well forward, it is injured in the early part of the operation and may defeat our operative procedure. The hemorrhage from the sinus is readily controlled by packing. If possible, the hemorrhage should be controlled by a compress well placed and the operation continued. In case No. 4, I opened the sinus by cutting through the wall with a spicula of bone removed from the sinus wall. The bleeding was quite alarming for a moment but ceased to give me concern when I saw how readily it could be controlled.

Injury to the facial nerve should and can be avoided. One should be careful not to sink the apex of the operative canal too deep nor should it be allowed to fall below the level of the spina.

In closing my remarks upon this subject, I wish to call attention to the fact that there is no field of surgery in which proper indications met at the proper time are so productive of good results as in the surgery of the ear. Many cases which are of a seemingly hopeless nature and in which all indications are pointing to a mastoidal or other more serious complication can often be brought back to resolution by properly directed intertympanic interference and judicious local general treatment. Nevertheless, it is not wise to carry our conservatism too far and there is no doubt that many of the most serious complications of middle ear suppuration could have been prevented by early judicious treatment or latterly by well-timed interference in the mastoidal region. After an operator is thoroughly well convinced that a suppurative inflammation has taken place within the mastoid cells, quick and timely interference is demanded. Delay is productive of no good. The earlier the operation is done, the less extensive is the destruction of the contents of the mastoid and the much more rapid is the healing process, and the less likelihood is there of involvement of the sigmoid sinus, or production of cerebral or cerebellar complications.

DISCUSSION.

DR. BRYAN said: The disease is certainly very much on the increase, and referred to statistics in the Index Medicus, as illustrating this fact. He ascribed as the reason for this, the prevalence of influenza during the past few years; and mentioned that the importance of free drainage in these cases is not sufficiently appreciated by the profession, the abscess often being allowed to drain spontaneously. The use of the iodoform gauze,

packed tightly in the auditory canal, he maintained was responsible for an aggravation of the trouble, and the use of peroxide of hydrogen causes an increase of the disease, it producing swelling through the formation of gas, by the action of the peroxide upon the pus. He also referred to the injurious effects of the air bag, having seen several cases of mastoid abscess which had been caused by the forcible use of air pressure; this results frequently when there is not free enough vent in the membrana tympani, it being used sometimes when there is only a small hole in the tympanum; in such cases the pus is driven up into the mastoid cells.

With regard to the time of performing the operation, he said that when there is much tenderness, swelling and fever, it will be readily understood that the symptoms demand immediate operation. Fever, however, is not a constant symptom and the surgeon may be induced to delay operation in cases where there is intense pain because no other symptom is present. If the pain exists for four or five days it is sufficient indication for operation. Certain antiphologistic measures, as the ice coil, used in the early stages, are successful in preventing abscess in this region. He condemned the use of poultices in this disease. He did not understand why any one accustomed to the use of the chisel should use a trephine, saying that if the mastoid abscess has advanced to any extent of suppuration and has passed through the antrum into the mastoid cells, the chisel is the only instrument with which the abscess can be reached; he uses the chisel and gouge entirely, he has no experience with Dr. Blake's method of bringing about primary union by leaving a blood clot in the wound and thought that by allowing the clot to remain, the liability of having a septic wound was greatly increased. In the majority of these cases the suppuration does not cease after the abscess is cleaned out, there being pus foci which it takes some time to reach, and he disagreed with those who contend that by cleaning out the mastoid cells and antrum, middle ear suppuration ceased. He mentioned a few cases, however, in which it was only necessary to open the antrum and mastoid cells and to wash out the tympanic membrane when the suppuration ceases.

Dr. Belt said: Acute otitis media with mastoid suppuration most commonly results from acute inflamation of the nose and throat following measles, influenza, scarlet fever, etc. He referred to the fact that ear-ache was treated too lightly and when earache does not yield promptly to the ordinary measures paracentesis is usually necessary.

Dr. Thompson was surprised that no one had referred to the dangerous complications of this disease. He thinks the mastoid operation when done in time is comparatively simple, and usually successful. In those cases in which there is middle ear disease from this mastoid trouble, sometimes there is no relief from the operation described, and he referred to cases of pyemia and thrombosis resulting from middle ear disease. Where there are symptoms of septicemia or pyemia the condition must be relieved by more thorough surgical interference. He contends that in cases of thrombi and pyemia it is essential to go through the deeper layer of the mastoid cells and expose the lateral sinus. He referred to cases where the lateral sinus had been opened, the thrombi removed and the jugular vein ligated and washed out.

Dr. Dufour said that Dr. Richardson, in speaking of the etiology of mastoiditis had omitted circumscribed external otitis. He referred to a case where the auditory canal was so swollen that it was impossible to see the drum, there being no signs of suppurative otitis media; it was a case of mastoiditis, begining from an external otitis, and upon being opened through the external canal discharged one or two ounces of pus. Later the symptoms recurred and the mastoid was opened, when it was found that the antrum was involved and the lateral sinus was thrombosed. The sinus was exposed, the thrombus removed and the jugular vein ligated. After several day's symptoms of pyemia occurred and it was several weeks before the patient recovered. He said that frequently the operation can be avoided by antiphilogistic measures, as ice externally on mastoid and douch-

ing the ear with hot antiseptic solution and a properly performed paracentesis. To overcome the pain connected with this operation he gives nitrous oxide gas.

Dr. VanRenssalær said the operation is not alone to relieve the pain but to prevent the condition which Dr. Thompson mentioned. He has never seen a case with fever and swelling that could be relieved without operation. Theoretically it may be very well to ligate the vein and turn out the clot, but thinks that the patient is liable to die from the irritation of the brain.

Dr. Richardson thanked the gentlemen entering into discussion. He stated that the continuation of suppuration after the mastoid operation, as referred to by Dr. Bryan, was solely due to the incompleteness of the operation, there must have been carious or necrosed bone, which was not removed. The continuation of suppuration from external auditory canal never occurred in any of his cases, the canal requiring no attention after the operation. He feared that Dr. Thompson had misconceived the tenor of the paper. The paper was one on the acute mastoid abscess, complications as thrombosis, cerebral absces and meningitis were not mentioned An early and well done mastoid operation is seldom followed by these complications. When complications exist as septic thrombosis, ect., the aural surgeon recognizes them and operates for these conditions; the mastoid operations, these being but an incident in the major procedure. He would hesitate to do a mastoid with a rongeur forceps as Dr. Thompson advises, but would rather rely upon chisels and trephine, using only a rongeur when it would serve a nice purpose. In evacuating pus through an incision in the membrana tympani he never finds it necessary to give a general anæsthetic before making the incision as advised by Dr. Dufour.

Meeting of April 12, 1898.

The President, Dr. S. C. Busey, in the Chair.

The following letter from Dr. Busey was read :

Washington City,
April 13, 1898,
901 Sixteenth St., N.W.

Dr. Thomas C. Smith,
Corresponding Secretary Medical Society of the District of Columbia,

My Dear Doctor :—In response to your communication transmitting to me the preamble and resolutions of the Medical Society of the District of Columbia in commemoration of the fiftieth anniversary of my graduation in medicine, I beg that you will convey to the Society the assurance of my appreciation of the distinguished honor conferred upon me, and of the pleasure and gratification it gives me to know that my conduct and bearing through so many years have received the approval and commendation of my professional friends and colleagues.

With great respect, I am yours very truly,

Samuel C. Busey, M. D.

PROGNOSIS AND TREATMENT OF LATERAL SPINAL CURVATURE.

By A. R. Shands, M. D.

When one has to examine a case of lateral spinal curvature he must be prepared to express an opinion as to the prognosis. Before this opinion can be expressed many conditions must be taken into consideration. If the case be one in which rotation and fixation of vertebræ exist, an unreserved opinion in the negative may at once be given; but if the case be one in which only lateral deviation exists or complicated by rotation that can be corrected by extension, a favorable opinion can be given. In no instance can it be said that a patient with a well-marked case of lateral curvature will untreated grow out of the deformity. Probably the prognosis is less favorable when the deformity is due to rickets than in any other class of cases. Fortunately

these cases are rare. Curvature arising from partial paralysis—anterior poliomyelitis of the spinal muscles are very unfavorable.

The age of onset is a factor of greatest importance in the prognosis, the later in childhood the disease is developed, the more favorable the ultimate result. In considering the clinical history of lateral curvature it is a well-recognized fact that the period of spontaneous arrest is at the cessation of growth. Sex is an important factor in prognosis; the deformity assumes much more severe and rapid form in girls than in boys, owing to their lack of muscular development and feeble health, often aggravated by disorders of menstruation. Lateral curvature is more common in girls than in boys; the average proportion is eight girls to one boy. This fact is to my mind the strongest argument in favor of gymnastic treatment to be spoken of at length later.

Persistent anæmia, chlorosis, disorders of menstruation, all of which are so often found in these poorly developed girls that are victims of latural curvature, not only aid in the rapid development of the deformity, but prevent, to a great degree, the execution of an active course of treatment for muscular development. The most unfavorable subjects of all are giris in whom ill-health is tinged with hysteria. Occupation is to be considered always; when curvature does occur in boys it is almost always seen in those that have faulty occupation; those that have to carry heavy weights on their heads or shoulders.

The site of the curvature is a matter of importance; those in the lumbar spine being much less favorable. Curvature with long radii are much more amenable to treatment than those with short; when the radii are short there will be an early development of compensating curves, which adds to the complexity of the case. More attention should be given to the flexibility of the spine than to the amount of lateral deviation present. A spine in which the deformity will disappear to a marked degree by suspension is favorable for treatment. When rotation exists, as is evidenced by the altered condition of the ribs and chest, the prognosis is bad as to much improvement. A checking of the progress of the deformity here is all that can be hoped for and this only by most vigorous treatment. One cannot be too careful in noting amount of rotation present before giving his opinion as to prognosis. The test should be through suspension of the patient to relieve the superincumbent weight, and to have the patient assume the "key-note" position; the latter test enables one to see how much of the deformity the patient can voluntarily overcome. How rational it should seem to one that if a patient can voluntarily overcome by action of weak muscles a certain amount of the deformity, how much more should be overcome by developing these weak muscles that are responsible for the condition.

The fact that lateral curvature is eight times more common in girls than in boys is very significant that lack of muscular development is by far the most important etiological factor in this deformity. When one considers how very different are the customs, amusements, games, etc., of a boy from those of the average girl, it is readily understood why there is such a difference in their muscular developments. The nearer a girl approaches a boy in her amusements, the more athletic her games will be and the less likely will she be to have lateral curvature. It is with great satisfaction that we note of late years that systems of

athletic exercises are being established in the pub'ic schools for the development of children.

The conclusion that one should reach as to the prognosis is first: that it depends more upon the amount of rotation present than to the extent of the curvature; secondly, curvatures submitted to treatment early, even when quite pronounced, may be corrected in a large majority of cases, provided the patient's health remains good and you can secure their hearty co-operation. The treatment to be efficient must be continued for a long time. The trouble being simply a distortion of growth and not a disease that threatens the life of the patient, who becomes accustomed so gradually to her deformity, it is often a difficult matter to get them sufficiently interested in the treatment. As long as the spine is flexible a great deal can be done in way of improvement; at any rate the progress of the deformity should be checked, for just as long as the spine is flexible it is going to increase, until it becomes fixed.

The treatment of lateral curvature should be considered from two standpoints, viz: prevention and cure. Children should be instructed how to carry themselves and to avoid all faulty positions that will throw extra strain on the muscles of one side of the spine. Excessive use of the right arm should be avoided; note the fact that nearly every case of lateral curvature is to the right side. Faulty positions in writing should be corrected; above all bad positions in sitting especially should this be looked after in school children, whose chairs and desks should be so constructed as to give the greatest possible support to their spines. Nothing is more prolific in the production of spinal curvature than long piano-practicing on an ordinary piano-stool. It seems almost impossible to impress upon the laity, the fact that the use of stiffened corsets by preventing normal action of the spinal muscles will aid in the production of this deformity.

Faulty positions in children during sleep should be looked after; they should not be allowed to sleep all of the time on one side; supine position with no pillow is the best position for a sleeping child. When there is deformity the child should sleep on the side of the concavity, for in this way the muscles of that side are put on a stretch, which in turn will correct a certain amount of the convexity on the opposite side.

Mr. Bernard Roth of London reports a large number of cases treated exclusively by gymnastic exercises with perfectly satisfactory results. He favors daily exercise of most vigorous kind for the rapid development of the weak muscles. He never uses spinal supports except in severe cases of infantile paralysis of the erectores spinae muscles, where, by no voluntary muscular effort, the patients can place themselves in an improved posture.

Dr. Jacob Leschner of New York, says "The objection to all supporting appliances is that each and every one will, to a greater or less extent, interfere with the mobility of the spine, and in that manner deprive back, chest and abdominal muscles of that perfect freedom of action, which is a necessary and powerful adjunct in the successful treatment of deformities."

The surgeon should personally train the patient to do such exercises as are best suited for each individual case and not trust them to an athlete in a gymnasium, who knows nothing of the anatomy of the spine. Improper exercises are just as powerful a factor to do harm in such cases as proper exercises carefully and systematically given are to do

good. Physical culture institutes are very good to prevent the occurrence of lateral curvatures by developing the whole muscular system, but patients with incipient curvatures are not fit subjects for such institutions. Before beginning a course of treatment one should make very careful notes as to the condition of the patient, for if accurate measurements are not made at that time it is very easy to be deceived as to any improvement. The writer has found the following method very useful and accurate: First mark with a dermatgraph pencil the spinous processes, and have the patient assume the key-note position. Then stretch a cord from tip of the coccyx to 7th cervical vertebra and note the points of greatest variations of the spinous processes from this cord. It is unfair to the patient to take such measurements without having her to assume the best voluntary positions; of course notes should be made of both positions. Note the distance of the angle of the scapulæ from this cord; with a lead tape, take a tracing of the chest at the point of greatest deformity; this should be done with patient bending forward as far as possible with feet and knees together in a line with the vertical axis of the body. There are one or two points in treatment that should receive special attention, as they are applicable to every case that offers anything in the way of improvement from treatment, viz: suspension; both self-suspension, such as assuming the key-note position in the most vigorous manner, and forcible suspension by means of the Sayre apparatus. This attitude expands the chest like the working of a pair of bellows and at the same time stretches the faulty spinal muscles, as well as those attached to arms and forearms. This is in reality an exaggeration of Sylvester's method of resuscitation. Faradism and massage are most excellent adjuncts to the gymnastic method of treatment; the best time to apply them is immediately after the exercise.

My method of treating these cases is to drill the patient in the exercises at my office, at first on alternate days and at end of two weeks have them do them every day for a week or ten days. It is then insisted that the exercises be continued at home. The treatment extends over several years in the average case. The patient should call to be examined and remeasured every two or three months which will enable you to see whether the deformity is increasing or not. I begin my patients with one pound dumbbells and have them increase the weight as the muscles are developed.

This paper would be incomplete without a few words about use of spinal supports. These are cases of weak and painful spines that have to be supported with braces for the comfort of the patients, but these supports should in no way be considered a part of the treatment and should be worn just as little of the time as possible. These are cases that require braces for cesmetic effects, these are old cases with prominent deformities, that have become fixed in their distorted positions. By properly constructed braces very prominent deformities can be almost entirely disguised.

DISCUSSION.

Dr. Thompson said: A great deal of harm is done in cases of lateral spinal curvature through patients taking their children to the instrument maker, instead of to the physician, the trouble resulting by reason of the continuous appliance of an instrument. Suspension, exercise and massage in treatment of these cases give best results; the greater number of those not having reached already an extreme degree of deformity being much benefitted. In bad cases well-fit-

ting plaster jacket, or brace, worn for a few hours during the day, while the patient is exercising, and taken off on reaching the house, will certainly give some relief. Satisfactory results are obtained in using suspension by the arm, or forced suspension. If the patient has been using a faulty instrument, when the case comes to the physician, with perhaps some rotation of the vertebræ, the results are less favorable. In such cases a nicely fitting jacket will improve the patient very much. No case of lateral curvature would result badly if treated properly in the begining.

JOINT MEETING OF THE MEDICAL AND ANTHROPOLOGICAL SOCIETIES OF THE DISTRICT OF COLUMBIA, APRIL 20, 1898.

The President of the Medical Society, DR. S. C. BUSEY, presiding, with PROF. W. J. MCGEE, the President of the Anthropological Society sitting on his right.

TREATMENT AND EDUCATION OF THE DEAF.

THE ANATOMY AND PHYSIOLOGY OF THE EAR.

BY FRANK BAKER, M. D.

DR. FRANK BAKER addressed the Society on the subject of the anatomy and physiology of the ear.

DR. BAKER said: The apparatus necessary for the purpose of conscious audition is divided into four parts:

1. The external ear, for receiving.
2. The middle ear, for transmitting.
3. The internal ear, for selecting.
4. The nervous apparatus and brain connected with these for conceiving the impression.

The external ear.—This is especially adapted for collecting the waves of alternate condensation and rarefaction of air that produce the auditory impressions. When the pinna or auricle is removed a considerable difference is noted in the ability to determine the direction of sounds. This ability is much more marked in those animals that have the auricle capable of movement and adjustment. The auditory canal of the external ear is closed at its innermost extremity by the funnel-shaped tympanic membrane that is so adjusted to the chain of osselets of the middle ear by the muscles that actuate them as to be extremely sensitive to very slight variations in the pressure of the air.

The middle ear.—This is essentially a diverticulum from the œsophagus, to which it is connected by the Eustachian tube; across it passes a chain of osselets for conveying the impulses received from the tympanic membrane. The permeability of the Eustachian tube is necessary for distinct hearing, as vibrations of the tympanic membrane are deadened if the cavity of the middle ear becomes entirely closed. This permeability is insured during health by an involuntary act of swallowing that occurs every few moments. This involves the action of the muscles attached to the Eustachian tube that draw its walls asunder and allow air to penetrate to the middle ear. The vibrations of the tympanic membrance conveyed by the osselets are of a molar rather than a molecular character, as is shown by the fact that anchylosis of the chain greatly impairs hearing. These vibrations are conveyed to the internal ear by an opening, the fenestra ovalis, into which the terminal end of the chain fits. Another opening, the fenestra rotunda, closed by membrane, appears to be a device for preventing excess of pressure from injuring the internal ear, rather than a secondary means of receiving vibrations.

The internal ear.—This is composed of a series of membranous passages and sacs filled with and surrounded by fluid and containing the terminal filaments of the auditory nerve. It is divided into the semicircular canals, the vestibule and the cochlea. The canals exist in animals that do not seem to have any distinct perception of sounds and appear to subserve a sense more primitive than that of hearing, viz: that of orientation or direction in space. They are reciprocally at right angles to each

other and thus correspond roughly to the three planes of space to which the dimensions of all solid bodies may be referred. Any change of position of the head of an animal will cause a flow of fluid through some of these canals, which flow will indicate the direction of the motion. They are supplied by a distinct branch of the auditory nerve which is distributed to certain peculiar neuro-epithelium with long hair-like processes that float free in the contained fluid. A person blindfolded and turned around on a whirling table can by this means obtain a distinct impression of any change of direction.

The sacs of the vestibule contain other terminations of the auditory nerve which possibly appreciate distinctions of the quality of sounds, at least in part.

The cochlea, which is absent in birds, probably contains the organ which appreciates pitch. Stretched across this coiled passage is a membrane of such structure that it is tense from side to side, containing a series of vibratile fibres carefully graduated in length, some 6,000 in number which is about the number of distinct sounds separately appreciable by the ear. Upon this membrane are certain neuro-epithelial structures to which the terminal filaments of the nerve are distributed. It would appear that we have here an apparatus capable of selecting and sorting the different vibrations that may reach it from without and of imparting its own vibrations to separate sets of nerve-filaments.

The nervous apparatus and brain.—The correlation of the impressions of quantity, quality and pitch received from the structures just described into a distinct auditory impression is effected by the nervous system. Since embryological investigations show us that the internal ear is merely a portion of the external surface that has become depressed and then enclosed within the skull, we should expect to find its nerve-endings formed on a similar plan to those of the general surface. This is the case, but the development of these nerve endings has become arrested at a somewhat earlier stage and their cell-bodies have not been withdrawn to ganglia along the spinal cord but lie near at hand within the temporal bone. The fact that the nerves coming from the semicircular canals have a totally different set of central connections, seems to support the hypothesis of the sense of direction already adverted to.

That the correlation of sense impressions received from the ear is a complicated process seems clear from the complexity of the anatomical elements involved. The receiving cells transmit their vibrations to others situated in the medulla oblongata, and these to others in the pons Varolii, in the posterior quadrigeminal bodies, in the cerebellum and in the angular gyrus of the cortex of the cerebrum. The exact significance of these complicated anatomical relations are as yet only surmised.

Causes of Deafness.

Dr. Robert Reyburn said: It has been found that 60 per cent of the entire number of cases of deafness we meet with are congenital. The investigations carried on by various observers have proved that the chief cause of congenital deafness is the marriage of cousins or persons who are too nearly related. Dr. Buxton says that he has found that every tenth case of deafness is the result of the marriage of cousins. Dr. Boudin relates the instance of two brothers, in perfect health, who married two sisters, their cousins-german. One of the sisters gave birth to one child who was deaf and dumb. The other sister had six children, three of them were deaf and dumb.

The census returns of Ireland for the year of 1871 report 201 cases of persons who were born deaf and dumb. The family history of these persons showed that 85 of these cases were the results of the marriage of first cousins, 63 of the marriage of second cousins, 32 were the result of the marriage of third cousins, and 7 were the results of the marriage of fourth cousins.

The next important cause for congenital deafness is the taint of struma or scrofula in the parents. As congenital deafness is generally the result of an arrest of development in the organs of audition of the fœtus, it can be readily imagined that this can easily occur, from

the low vitality and impaired nutrition of the ovum from such constitutional taint.

Forty per cent of the cases of deafness we meet with are due to diseases of the organs of hearing, which occur after birth. The eruptive diseases of children and especially scarlet fever are the largest factors in the production of these cases of deafness. Frequent attacks of quinsy often cause deafness. Diseases of the middle ear or tympanic cavity comprise from 75 to 85 per cent of the causes of deafness. In closing the writer would wish to emphasize most strongly the importance of early and close attention on the part of the physician to all diseases of the ear. Many parents have an idea that a discharge from the ear is harmless, and some appear to think that during the period of dentition of their children, it is even salutary. This idea has caused irreparable injury to the hearing of many children, and in many cases has even sacrificed their lives. As the great Dr. Politzer has well said "The aural cavity is bounded on the outer side by life and on the other three sides by death." Only a thin shell of bone separates the middle ear from the meninges of the brain, and inflamation affecting the internal ear, can and often does spread from the ear to the brain with fatal results.

Education of the Deaf

Dr. E. M. Gallaudet said that his remarks referred more particularly to the education of the deaf, and not to their treatment in the ordinary acceptation of the term.

It is a mistake to suppose that a new method of educating the deaf has been brought forward in this country. The two prominent methods of educating the deaf, the manual method and the oral method, are both a century and a half old, and each was as successful then as now. In 1760 a French prelate, the Abbé de l'Epée, established the first school for the education of the deaf in France. In the same year Thomas Bradford established the first school for education of the deaf in the British Isles; his method was the oral method. About the same year Samuel Heinicke began to teach the deaf, and about '78 he established the first school for the education of the deaf in Germany. His method was distinctly the oral method, and he very carefully undertook to keep out all features of any other method.

In the years 1815-1816, the founder of the first school for deaf mutes in this country, the speaker's father, went to Europe to acquaint himself with the methods used in that part of the world. The restrictions he met with in Great Britain were so severe, and the requirements so unreasonable, that it was impossible for him to gain admission to the schools of Great Britain. Owing to circumstances he went to France where he remained a number of months in the school founded by de l'Epée, then under the direction of the Abbé Licard; he returned to America and brought with him an educated deaf mute, named Cleve, a teacher in the Paris Institute. With his assistance the school at Hartford was opened. Other schools were opened and the manual method was used for a period of fifty years. Those mutes who were educated under the manual method were well prepared to meet and perform the duties of life. They were not taught to speak or read the lips; they were taught by the method based on the manual alphabet and language of gestures. Many thousands of deaf persons were taught under that method.

Doctor Gallaudet expressed the opinion that, if but one method was to be chosen under which all the deaf of a certain community were to be educated, preference should be given to the manual method because better results are obtained and greater developments of their intellect secured than by the oral method, if that is taken alone and all features of the manual method excluded. The manual method does not give to the deaf some very important additions to their education, mainly the power of speaking and the power of reading the lips. During the years 1844, 1845 and 1852 eminent American teachers of the deaf visited Europe. They reported that the method of teaching the deaf by speech was successful to a certain extent, but no great advance was then made in the matter of giving speech to the deaf. In 1867 a school was established in New York and also in North-

ampton, Mass., to be based on the oral method.

Dr. Gallaudet referred to the honor due to the late Gardiner G. Hubbard in connection with the establishment of this latter school. During the same year the board of directors at Washington, wishing to have the subject taken up carefully, requested Dr. Gallaudet to visit Europe and investigate the subject. He went to Europe with no great hope of obtaining anything satisfactory in the matter of teaching the deaf by means of speech, but became convinced that in this country, much as we had done for the deaf, we lacked very seriously in not attempting, at least, to give speech to the deaf. He therefore, upon his return, made a recommendation that the teaching of speech should be entered upon with all deaf children, and that the experiment should be made to ascertain whether all deaf children could be taught to speak. It was found that many children could not be taught to speak intelligently; he then recommended that a combination of the two methods should be followed, the combination being made according to circumstances. During the years following 1867 these recommendations were adopted in the schools of this country, and the teaching of speech was introduced and carried forward. Some other agencies have been brought into use to promote this cause, the American Association for the Promotion of Teaching Speech to the Deaf in the Schools of this Country, and the establishment of the Volta Bureau by Alexander Graham Bell. This institution is filling a long-felt want in the matter of the collection, preservation and distribution of publications relating to the education of the deaf. In 1897 Dr. Gallaudet received an invitation to visit England to assist in the establishment of an institution for the higher education of the deaf. After receiving an invitation to attend a congress in London the board of directors of his institution suggested that at the same time he make an examination of some of the schools of Europe and come in contact with some of the educated mutes of Europe. He attended the congress—an interesting meeting of the deaf themselves—there were several hundred present, and it was a very dignified and impressive body. The speakers of this congress carried on the discussions through the language of fingers.

In 1892 a petition was presented to the German Emperor signed by 800 deaf mutes for the education of the deaf, a portion of which Dr. Gallaudet read:

"Misled by exceptional results, which are reached with such pupils as are only hard of hearing, or such as heard and spoke in childhood and later lost their hearing, German teachers of the deaf persist in their endeavor, and employ the oral method with all pupils, without making a distinction between the real and unreal deaf-mutes, regardless of the fact that by this unnatural method of instruction the intellect of many of their pupils is enfeebled and wasted.

"Instead of cultivationg the sign-language bestowed upon the deaf mute by nature, and with its help enlarging his mind with all kinds of useful knowledge, German teachers lay the chief stress on mechanical drill in speech for the attainment of articulation, though the great majority of their pupils, even with the most painful efforts, do not even approach the desired end. Victims of a false principal, hundreds of pupils every year leave the German institutions, lacking not only in the most necessary branches of knowledge, but also in means of communication. Their artificially acquired articulation is rarely understood by hearing persons, and they do not acquire sufficient command of written language, and their sign-language is suppressed by the most rigorous means, communication between the younger deaf-mutes and their older companions in adversity is rendered difficult. Your most humble petitioners feel that it is an encroachment on their natural rights, and a great hindrance to their success in life, when that language which alone is adopted to their nature is forcibly taken from them. Daily and hourly adult deaf-mutes have the opportunity to convince themselves of the inadequacy of the artificially-acquired articulation, and of the indispensableness and usefulness of the sign-language; morover, the results of the American schools for the deaf, in which the combined system in practiced with the greatest success, cons tradict the assertion of the Germa-

teachers that the sign-language cannot be reconciled with the oral method."

This petition was unfavorably received and was opposed by the teachers of the deaf in Germany; they undertook to say that the educated deaf who signed this petition did not know what they wanted. Dr. Gallaudet therefore felt that it was very important to come in communication with some of these educated deaf people and learn from themselves what their views were and whether they were capable to judge of their methods or not. He visited a large number of educated deaf in German cities, perhaps six or seven hundred; he found that in nearly all of these cities organizations for the mutual benefit of the deaf were established. Dr. Gallaudet was received in several places with ovations and found the leaders of these deaf mutes men of high education He noted that, although he was in a country where the language was unfamiliar to him, yet he could converse with these deaf mutes by the language of the fingers, which is universal.

In Germany where the oral method has been persisted in from the beginning a very large proportion of the deaf receive a very small amount of education. It is interesting to note in this connection that all the teachers of the deaf in Germany are wedded to a single method. Some authorities, prominent among whom is Mr. Heidsiek, instructor in the Breslau institute for the deaf, have spoken strongly with reference to a broadening of methods. In 1896 there was published in the Annals a reference to one of his works which is important.

"The object of deaf-mute institutions can be no other than that of being to the deaf a substitute for the public school. Deaf-mute institutions are training and educational institutions, and their task consists in affording to deaf-mutes, according to their capabilities and necessities, suitable culture, and in equipping them with such intellectual and moral qualities as shall enable them to prove themselves serviceable members of the state, of the municipality, and of the church.

"With a view to attaining this object, the teacher of deaf-mutes, paying due regard to the individuality of his pupils, is bound to employ all means which shall assuredly and most quickly achieve the same. Among these means I enumerate, primarily, speech. Experience, however, teaches that the Congress of Milan overrated the serviceability of this artificial instrumentality of culture, and totally ignored the fact that the greater number of deaf-mutes can avail themselves of this means to a very unsatisfactory extent only, and that De l'Epee expressed an irrefutable truth when he asserted: 'For the deaf-mute there exitsts solely a visible form of speech.'

"The audibleness of speech is lost to the deaf-mute, and the uniform motions of the mouth operates so feebly and uncertainly upon the vision and mind that deaf-mute institutions employing this means of instruction exclusively are constantly losing their character as training institutions and schools of instruction for this method of instruction degenerates into torture, drill, and farce.

"For the purpose of cultivating the mind and heart, to explain or to impart vitality to spoken and written language, I consider the unconsciously developed natural gesture-language in vogue among the deaf as indispensable, and, on the other hand, I consider the methodical acquisition and use of the artificial manual alphabet a waste of time, an unnecessary aggravation of difficulties, and a prolongation of the period of culture.

"Accordingly, I consider the combined system as the most complete and serviceable method; with the distinct understanding, however, that, in teaching, verbal language (both in its oral and written form) should constitute the centre, whereas to the natural gesture language, on the other hand, a helping position should be assigned; the latter not to constitute an object of instruction, but solely to serve as a means of instruction.

"The conclusion reached by Dr. Gallaudet last summer in Europe was unquestionably that, to hold any school of the deaf to a single method, was not regarding the best interests of the deaf—a combination of methods must be employed. A great majority of the schools in this country are now using the combined system. Out of 55 schools, fifty are using this system and five the oral method."

THE

NATIONAL MEDICAL REVIEW.

VOL. VIII. WASHINGTON, D. C., NOVEMBER, 1898. No. 6.

Original Articles.

THE TREATMENT OF GONORRHŒA.

BY W. P. CARR, M. D.,
Washington, D. C.,

It has been a common observation, of late years, that syphilis is growing less severe and that gonorrhœa is becoming more and more formidable. It is quite certain that few cases of syphilis are now seen presenting the severe lesions described in classic works on the subject, while on the other hand the picture of gonorrhœa as we find it in our text books does not prepare the student for the numerous and serious complications and sequels that he will encounter in practice. Posterior urethritis, cystitis epididymitis, orchitis, prostatitis pyelitis, pyelonephritis, gonorrhœal rheumatism, boils and abcesses, are of such frequent occurence that it seems the rule rather than the exception that one or more of these serious affections shall follow or accompany an attack of gonorrhœa. And yet, it seems to me, we go on treating this disease as a trivial affection, and pay more attention to aborting or shortening the duration of the urethral discharge, than to the prevention of more serious complications and sequels.

My belief, that nearly all these sequelæ are attributable to faulty treatment, and particularly to the use of injections or other forms of local treatment, leads me to write this article.

I have had the oportunity of observing a large number of cases of gonorrhœa in private practice and in the Genito-Urinary Service at the Emergency Hospital and I have never seen any serious complication or sequel in any case where no local treatment had been used.

The majority of my private cases have been young men who have come to me with cystitis or epididymitis or posterior urethritis after having used some injection at the suggestion of a friend or druggist. I regret not having kept a record of these cases but I can recall from memory two who had purulent inflammation of the pelvis of the kidney preceded by gonorrhœal cystitis, six who had a general septic condition with gonorrhœal rheumatism, seven who had large perinæal abscesses, four who had true orchitis and fourteen with the ordinary form of orcho-epididymitis. The

number of strictures I cannot give but I am sure it is not less than 100. In every case I was careful to inquire whether injections had been used and received an affirmative answer in every case. Similar inquiry in a large number of hospital cases has given the same result. Injections, irrigations or medicated bougies had been used in every case.

In contrast with this I have treated in private practice during the last 8 years 50 cases from the beginning without injection or any form of local treatment, and not one of them has had a complication or a sequel, so far as I know; and most of them have been kept under observation for a year or more. Again, in the old Emergency Hospital from 1886 to 1890 the only treatment was Lafayette mixture and there were no complications.

In view of these facts and the experience of a number of other physicians I am convinced that it is much safer and better to treat gonorrhœa by internal remedies alone. If injections and irrigations are responsible for all or nearly all complications in this disease it will be admitted that in spite of occasional speedy and brilliant cures the average duration of the disease in any large number of cases will be greater when these measures are adopted.

While a considerable number of cases may be cured in a short time by irrigations, I feel that the risk is too great to justify their use, especially when there are other methods that are perfectly safe and that will effect a cure in nearly as short a time.

I have found that the internal use of sandal oil administered in capsules will relieve the pain and shorten the acute stage nearly as much as any local treatment, and if rest in bed and a proper diet be added, the average duration of the acute stage will not be more than three or four days. After the acute stage is over the suffering and inconvenience are not great and a little difference in duration is not an important matter. It is certainly better for the patient to spend a few days or even a week in bed than to run the risk of an orchitis or some worse complication. Statistics of the German army where rest is enforced show the average duration to be not over five days.

It is a significant fact that a sudden cessation of the discharge after the use of injections usually precedes the appearance of any complication, and that the discharge reappears upon improvement in the complication. Many older writers of large experience, after the treatment of immense numbers of cases by all kinds of injections, weak and strong, have found no benefit from them and have advised against their use.

Milton, who treated thousands of cases, came to the conclusion that the average duration was not shortened, that they did more harm than good and advised soaking the penis in hot water as a substitute from which great benefit was derived.

Of late, since the brilliant results of antiseptic wound treatment have been recognized there has been a very general and very natural revival of injection and more particularly of irrigation methods. When we remember, however, that the germs are deeply seated in the glands of the mucous membrane, it will be seen that it is impossible to reach them and that we can only cleanse the surface by our antiseptic washes. As this is done by the natural passage of the urine at frequent intervals it is unnecessary to do it artificially as in the case of suppurating wounds.

Astringents undoubtedly lessen the discharge as they do in the case of any inflamed mucous membrane but I do not consider this an advantage. On the contrary I believe that it causes a blocking up of the mouths of the mucous follicles with hard coagula or by irritating and causing swelling in the papillary layer, and that in this way gonococci and their poisonous excretions become imprisoned in the deeper parts of the follicles, many of which reach down into the submucous tissue. Under such circumstances the poison does not escape through the duct of the gland and flow off, but is confined under more or less pressure, deep in the mucous membrane, and is absorbed to a greater or less extent.

Under such conditions the poison may destroy the epithelial lining of the deeper part of the gland and escape freely into the submucous tissue carrying with it gonococci and other germs that may be present. It is in this way no doubt that many of the inflammations of the submucosa originate ; and this deep inflammation is well known to be the usual cause of stricture.

There is of course less danger of plugging up the ducts by irrigating with very mild solutions. But the mildest solution —even the normal salt solution—is irritating during the acute stage, and may cause such a swelling in the papillary layer as to press upon and occlude those glands that pass through it into the submucosa, and in this way bring about the same result.

If no such local treatment be instituted the secretion from the bottom of the glands will flow away freely, and be washed out by the urine at frequent intervals, carrying with it many germs and much poison. There is, also, with all forms of injection the danger of carrying germs back to the posterior urethra or bladder, and the milder and more copious the irrigation the greater will be this danger, as strong injections will be more likely to weaken or kill such germs as are washed back, while the weaker solutions will not do so.

I am aware that many flattering reports have been made as to the use of weak irrigations with potass permang. and other drugs. There are also men, who boldly assert their ability to cure gonorrhœa in three days. There are some in our own medical society who boldly make this claim, if I can believe the statements of several patients upon whom they have failed to work this sudden cure, but caused some complication instead. I have met a few who have been cured in three days or think they have. I do not doubt that some cases are aborted in this manner, nor that many cases are symptomatically cured in a comparatively short time by careful irrigation. I am convinced, however, that the advantage gained is too slight to compensate for the risk of causing complications. This brings us to the important question when is a given case of gonorrhœa cured.

Certainly not when the discharge ceases nor even when the mucous threads disappear from the urine. The germs may often be found in the urethra after all such signs have disappeared. I know one young man who conveyed the disease in a virulent form after all local signs and symptoms had been absent for a year. He was still suffering from rheumatism, however, which was believed to be gonorrhœal. I have personal knowledge of a number of cases where months after apparently complete cure there has come about some unmistakable evidence that the germs were

still present in the urethra. Such persons may spread the disease or may have a relapse upon excessive sexual excitement. It is in my opinion impossible to say when a case is cured. The best test, perhaps, is repeated bacteriological examination of the urethral secretion, which may be obtained, when no discharge is present, by passing a sterile sound some distance into the urethra. If no gonococci be found after several examinations, at intervals of a week, it may be taken for granted none are present.

The ideal treatment for gonorrhœa is rest in bed, a milk diet and the use of internal remedies that are excreted by the urine and render it antiseptic.

If this plan of treatment be carried out there will be no use for anodynes, the duration of the symptoms will be less than a week and there will be no complications or sequels. Unfortunately rest in bed cannot always be enforced. I am sure, however, that if its great importance were generally appreciated by physicians and insisted upon, it would soon become the rule for gonorrhœal cases to remain in bed instead of being the rare exception as at present. We have been too much in the habit of saying to our patients "You ought to go to bed. But of course I know you are not going to do it, so I will not insist upon it." We ought to say "You must go to bed, or I cannot be responsible for the result."

Many typhoid patients say they cannot go to bed, but will go when told that they must. It will take some time to bring it about; but I think the time is coming when we will no more allow a case of gonorrhœa to go about than a mild case of typhoid fever.

The diet is also a matter of much importance, nitrogenous food and over eating of any kind of food has a marked effect in prolonging the inflammation, as, has also, beer and most wines.

I have failed to notice any bad result from the moderate use of whiskey, brandy or gin; but it is safer to prohibit all alcoholics. For a few days an absolute milk diet should be insisted upon. After that, milk and bread or rice or oat meal may be allowed. But for a long time even after complete disappearance of the symptoms meat and rich food and condiments should be very sparingly used. It is not uncommon for a glass of beer or a full meal to cause a reappearance of the discharge when it has been absent for a week or more.

I can offer no explanation for the deleterious effect of certain foods unless it be that they furnish some exceedingly favorable pabulum for latent or enfeebled germs.

The bowels should be kept open by Hunyadi or other saline water or salts.

It is well known that many drugs are excreted by the urine and render it more or less antiseptic. After taking carbolic acid, or salol or boric acid the urine may be kept in an open vessel for days and sometimes even for weeks without decomposition.

The advantage of having such urine in the bladder is apparent. It must form an effective barrier against the extension of the inflammation to the bladder ureters and kidneys besides exerting a beneficial influence as it flushes the urethra.

I have found sandal oil given in capsules of 5 grains every 2 or 3 hours the most effective of these remedies, and it often gives prompt relief even after the bladder has become involved. It also greatly relieves the pain of micturition when that sympton is present. In cases

that cannot be kept in bed the ardor urinae is often severe.

One of the most effective means of relieving it is the wearing of a condom containing a drachm of 1 per cent solution of carbolic acid, for 15 or 20 minutes before urinating.

Patients who have carried about with them a small vial of the solution and used it in this way have told me that it was a great comfort to them. It is also the most effective way of relieving chordee.

Rendering the urine neutral with potassium salts is also of great value, and cannabis indica is remarkably effective if a reliable preparation be used.

Soaking the penis several times a day for 10 or 15 minutes in water as hot as can be borne, as recommended by Milton, has a strong tendency to reduce the inflammation and shorten the attack, and also relieves pain. This may be done simply by using a cup of hot water and adding to it from time to time hotter water from a small pitcher. The gonococcus is said to be killed by a temperature of 105° F. and it is quite possible to raise the temperature of the whole pendulous portion of the penis to that degree.

Dr. W. F. R. Phillips informs me of a case where the inflammation was confined to the outer portion of the urethra, which he believes to have been sterilized and cured in this way.

ALTERNATING DYNAMO CURRENTS.*

By Francis B. Bishop, M. D.,
Washington, D. C.

At our Toronto meeting, Prof. Herdman introduced the subject of the alternating dynamo current as a therapeutic agent. Several interesting cases were reported as successfully treated. Within the last year I have been fortunate enough to get the alternating current in my office. This is transformed from 1,100 volts to 104 volts. I use it to run motor to turn my static machine, lighting my office, running electric fans, etc. The principal objection to its use for mechanical purposes is that, so far, there has been no economical speed regulator invented, therefore the speed has to be regulated by the size of the pulleys on the machine. I have recently placed in my office a transformer made for me by Mess. Waite and Bartlett of New York. This reduces my voltage from 104 to four volts, and gives me practically a sinusoidal current of 16,000 alternations per minute. By this transformer the current may be turned on very gradually from zero to the full capacity of the apparatus. It is a perfect machine for light cautery work. The sensation of the current in moderate strength, is very pleasant.

This current may be passed through the high tension combination coil with all the variations to which the coil is susceptible. In using it in this way, the vibrator is usually screwed down, but if the current is allowed to run the vibrator, using the full length of the coil, the tension of the current is much higher than when the vibrator is screwed down ; this can be demonstrated with the Geisler tube, which also shows the current to be purely alternating.

What the special therapeutic properties of this current, and its various modifications, are, I am not yet prepared to say, but I imagine that its range of therapeutic usefulness is very great. I

*Read before the American Electrotherapeutic Association at Buffalo, N. Y., September 15, 1898.

should think that it would meet nearly, or quite, all of the demands of the sinusoidal machine, as well as giving us a high tension alternating current.

Dr. Herdman spoke of a number of pathological conditions which were favorably influenced by the aid of this current. I hope that he will give us the benefit of his further experience. I have treated a few cases with the aid of my transformer, but the time has been too short to record results. Two cases of writer's cramp have been greatly benefited by this current.

A HERMETIC SEAL FOR BACTERIAL CULTURES.

By CHARLES F. DAWSON, M. D.,
Washington, D. C.

In the Centralblatt für Bakteriologie u. Parasitenkunde (Jena, 1892, xii, 720) I published a method for hermetically sealing bacterial cultures in tubes. Since then extended experimenting has established its reliability. Out of some hundred tubes, sealed accordingly and subsequently exposed for six months to the highly polluted atmosphere of an exhibition hall, but a dozen were found contaminated, and in these the contaminant was probably originally contained within the cotton plug.

The special features of the method are, 1. perfect reliability; 2. ease and rapidity of application; 3. transparency of the seal, and 4. capability of being removed without destroying the tube.

The technique is as follows: Having plugged the tube, flame the end, and, with sterile scissors neatly cut off the cotton even with its mouth. Flame a thick round cover slip, of the same diameter as the tube, and place it on the shorn plug. A piece of sheet gelatine is soaked for half a minute in a solution of mercury bichloride (1 : 1000,) kneaded between finger and thumb until quite sticky, drawn over the end of the tube (including cover slip) and stretched gently down by passing through the partly closed left hand. Now, press the mantle-like gelatine against the tube by means of a small rubber band pressed close under the flange of the tube's neck, and, waiting two or three minutes, run the edge of a sharp knife around between flange and band, severing from the cap, thus formed, all superfluous gelatine, which, with the band is removed. Fit the cap neatly into place by gentle pressure and when thoroughly dry give it a coat of shellac varnish, which will ensure a perfect jointure of glass and gelatine and will lend to the latter a certain strength against breakage. The varnish may be compounded as follows: Take—

Absolute alcohol	100 parts
White shellac	45 "
Bals. copaiba	4 "

Mix and allow to stand for a fortnight, whereupon an amber-colored, supernatant liquid forms, which should be carefully drawn off into a bottle provided with a paraffined cork stopper.

Another method of sealing cultures which has given me entire satisfaction and which is even more easily applied than the foregoing is as follows:

Flame the end of the culture tube, trim even the cotton plug and depress it about one-fourth of an inch. Pour in upon the plug a fluid mixture of plaster-of-paris and corrosive sublimate or other aqueous solution of a germicide. When the plaster has set and become thoroughly dry, paint the surface over with boiling-hot paraffin. The hot paraffin will permeate the plaster disc, making it impervious, and forming a complete air-tight joint around the edge. As in the other method, this seal can be removed without destroying the tube.

THE NATIONAL MEDICAL REVIEW,

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AND

THE MILITARY SURGEON,

A SUPPLEMENT,

UNDER THE CHARGE OF

Colonel WILLIAM H. FORWOOD, Assistant Surgeon-General U. S. Army.

OFFICE: 1408 Twenty-first Street, N. W.

WASHINGTON, D. C., NOVEMBER, 1898.

Notices and Reviews.

MEDICAL DISEASES OF INFANCY AND CHILDHOOD. By Dawson Williams, M. D. Cloth, $2.50 net. Lea Bros. & Co. Philadelphia.

The author's intention in giving this book to the profession is to furnish young doctors and those who have not previously paid much attention to the subject, a guide to the clinical study of disease as it occurs in infancy and childhood. He has not deemed it his duty to attempt to describe fully diseases which present symptoms similar at all ages. His object has been rather to indicate the special incidence of disease in childhood; to elucidate as far as possible the causes of this special incidence; to point out the peculiarities which the circumstances of child-life impress upon familiar diseases, and to detail the treatment rendered appropriate by the nature of the disease itself and by the peculiar susceptibility of the growing organism. In discussing the subject of treatment, prominence has been given to the rational basis afforded by pathology and by clinical observation.

A POCKET MEDICAL DICTIONARY. By George M. Gould, M. D. Price $1.00 net. P. Blakiston's Son & Co. Philadelphia. 1898.

Everything that Dr. Gould does, he does well, and this new edition of his Pocket Medical Dictionary is no exception to the rule. Although the first edition suffered no abatement in popularity the author was not content unless he added the new words which have of late increased at so tremendous a rate. The present volume has been wholly made over and the number of words defined is nearly double that of the other volume.

ELEMENTS OF HISTOLOGY. By E. Klein, M. D. and J. S. Edkins, M. B. Cloth, $2.00 net. Lea Bros. & Co. Philadelphia.

Since the last edition of this book in 1889, considerable additions have been made to the knowledge of minute structural anatomy. The progress in the knowledge of the structure and life of the cell and muscles, the remarkable discoveries in the structure of the central nervous system and sense organs have made it necessary for the authors to revise and to make considerable additions to the chapters dealing with these organs. This new edition furnishes a masterly guide to a subject which is fundamental, underlying even anatomy. It appeals to instructor and student alike by its clearness, conciseness, excellent type arrangements and its beautiful illustrations.

THE PHYSICIAN'S VISITING LIST FOR 1899. $.100 net. P. Blakiston's Son & Co. Philadelphia.

This is the forty-eighth year of the publication of this valuable little book. It is not necessary to dilate upon its completeness, compactness, and simplicity of

arrangement for every edition proves the possession of qualities which make the book so popular with practitioners of medicine.

A MANUAL OF OTOLOGY. By Gorham Bacon, M. D. Cloth, $2.00 net. Lea Bros. & Co. Philadelphia.

This new and compendious Manual of Modern Otology owes its text to Prof. Gorham Bacon of the Cornell University Medical College in New York City, and it bears a cordial endorsement in an introduction by Prof. Clarence J. Blake of the Harvard Medical School, Boston. It comes to hand with the full stamp of authoritativeness and at a most opportune time. Though one of the most patient of human organs, the ear has its own share of troubles, and their urgency, painfulness and contiguity to vital spots render it incumbent upon every student and practitioner to be prepared to meet them. Modern otology is abundantly resourceful as shown in this clearly written and well-illustrated hand-book.

DISEASES OF WOMEN; A MANUAL OF GYNECOLOGY. By Francis H. Davenport, M. D. Cloth, $1.75 net. Lea Bros. & Co. Philadelphia.

With the present multiplicity of gynecological treatises and text books, it may well be questioned what useful purpose a new one can serve. It has, however, seemed to the author that there is no book which exactly fills the gap which this one is intended to. It has two main objects: in the first place, to give the students clearly, but with considerable detail, the elementary principles of the methods of examination, and the simple forms of treatment of the most common diseases of the pelvic organs; and in the second place, to help the busy general practitioner to understand and treat the gynecological cases which he meets with in the course of his every day practice. In this third edition Dr. Davenport has deemed it wise to include surgical as well as non-surgical methods of treatment.

THE INTERNATIONAL MEDICAL ANNUAL. Cloth, $3.00. E. B. Treat & Co. New York. 1898.

This volume is a storehouse of useful information garnered by skilled laborers in every field of medicine and surgery. It should find itself every day close at the hand of the busy doctor. Thirty-five contributors, both British and American, have united in making this work a great success. In preparing this sixteenth annual issue they have worked on the lines which have always met with the approval of the profession. They have reviewed the progress of medical science as presented by current medical literature, and in addition is to be found an atlas of the "Bacteria Pathogenic in Man," an entirely original and up-to-date article by S. G. Shattuck, F. R. C. S., of the Royal College of Surgeons Museum. The publishers regret that they have been obliged to hold over the completion of the plates until the next issue when they hope to provide the readers with a complete atlas of the bacteria which have assumed such an important place in medical study.

MANUAL OF SKIN DISEASES. By W. A. Hardaway, M. D. Cloth, $2.25 net. Lea Bros. & Co. Philadelphia.

In preparing the second edition of this valuable work, the author has aimed throughout its pages to make it a useful and trustworthy reference book of the diseases of the skin, especially so from the standpoints of diagnosis and treatment. With this object in view practical and fully established facts have been given more prominence than theoretical questions, although these latter have not been altogether neglected. The work has been brought thoroughly up to date, and its enlargement has withal been accompanied with a reduction in price, which expresses the publishers' confidence of a widely extended sale.

DIET FOR THE SICK. By Miss E. Hibbard and Mrs. Emma Drant, matrons at two large hospitals in Detroit. 103 pages; board sides, postpaid 25 cents. The Illustrated Medical Journal Co., Detroit, Mich., publishers.

This is the third edition of this handy and popular little bedside book. The recipes for sick dishes have all been tried, and are those largely used by the Detroit hospitals where the two contributors of them served as matrons. Added to these are various Diet Tables, as for: Anæmia, Bright's Disease, Calculus, Cancer, Consumption, Diabetes, Dyspepsia, Fevers, Gout, Obesity, Rheumatism, Uterine Fibroids, etc., as given by the highest

authorities. The booklet is intended to be given to the family by the physician, and for such purposes one-half dozen will be sent, prepaid, on receipt of $1.00.

THE CARE OF THE BABY. By J. P. Crozer Griffith, M. D. Cloth, $1.50. W. B. Saunders. Philadelphia. 1898.

This book is a reliable guide for mothers anxious to inform themselves with regard to the best way of caring for their children in sickness and in health. The gratifying success of the first edition induced the author to bring the present one up to the demands of the times. The work is not intended to supplant the physician. The author considers this impossible.

ESSENTIALS OF MATERIA MEDICA THERAPEUTICS, AND PRESCRIPTION WRITING. By Henry Morris, M. D. Cloth, $1.00. W. B. Saunders. Philadelphia. 1898.

The enormous sale of Saunders' Quiz-Compends is indisputable evidence of the value of these self-helps to students and physicians. In the preparation of this fifth edition, the author has not only followed closely the last edition of the U. S. Pharmacopœia, but has also brought the book, as nearly as possible, abreast of the times.

THE TREATMENT OF SKIN CANCERS. By W. S. Gottheil, M. D. Cloth, $1.00. International Journal of Surgery Co. New York. 1898.

This is a plea for the use of caustics in the treatment of many skin cancers. The author says that cutaneous carcinoma is preferably treated, in the great majority of cases, by caustics, which give the best results with the least liability to return.

PRACTICAL URANALYSIS AND URINARY DIAGNOSIS. By Charles W. Purdy, M. D., LL. D. Extra Cloth, $2.50 net. The F. A. Davis Co. Philadelphia.

The fourth edition of this very practical work has been called for by several important facts. Three large editions of the work have been exhausted within three years of its first appearance. More than sixty medical colleges in the United States have adopted it as a text book upon the subject therein treated. Moreover its reception by the profession in general has been most flattering to the author and publishers. A number of new illustrations have been added and the book has been materially improved both in quality and design.

A PRIMER OF PSYCHOLOGY AND MENTAL DISEASE FOR USE IN TRAINING-SCHOOLS FOR ATTENDANTS AND NURSES, AND IN MEDICAL CLASSES. By C. B. Burr, M. D. Extra Cloth, $1.00 net. The F. A. Davis Co. Philadelphia.

This little book is intended for use in training-schools for attendants and nurses, and in medical classes. There is without doubt a field of usefulness for the Primer of Psychology as a text-book for medical students. In the first part the author treats of Psychology; in the second, he discusses Insanity; in the third, he gives the Management of Cases, and in the fourth, he gives General Suggestions.

THE PRINCIPLES AND PRACTICE OF MEDICINE. By William Osler, M. D. D. Appleton & Co. New York. 1898.

It seems scarcely possible to add anything to the many words of commendation which have been bestowed upon every edition of Prof. Osler's remarkable work. The care and attention given to the preparation of the first and second editions have been increased and multiplied in the case of this third edition. In fact it has been wholly recast. In the sections on typhoid fever, tuberculosis, rheumatic fever diabetes, gout, anthritis deformans, parasitic diseases, diseases of the blood, heart, lungs and kidneys, much new matter has been incorporated. The section on diseases of the nervous system has been rearranged, and the diseases have been grouped in accordance with the modern conceptions of the anatomy and functions of the parts. Among the articles which have been re-written or are new, will be found vaccination, beri-beri, the bubonic plague, cerebro-spinal fever, pnemonia, Malta fever, yellow fever, dengue, influenza, leprosy, glandular fever, the gonorrhœal infection, cancer of the stomach, the gastric neuroses, enteroptosis, the cirrhoses of the liver, jaundice, the diseases of the bile passage, diseases of the pancreas, diseases of the spleen and others. In all sections the author has maintained the thoroughly practical character of the work as a guide in diagnosis, symptomology and treatment.

Progress of Medicine.

GENERAL MEDICINE AND SURGERY.

UNDER THE CHARGE OF

EDWIN B. BEHREND, M. D.

Disease of the Heart in Consequence o Excessive Laughter.

A young girl, aet. 13, while playingf with her friends and indulging in immoderate laughter, was seized with severe pain in the præcordial region. There soon developed, dyspnœa and a feeling of anxiety and oppression. The face became pale and anxious. The patient sat upright in bed, groaning and gasping for breath and complaining of severe pain in the chest. The pulse was very frequent and small. The heart's action was weak and rapid. The heart tones were scarcely to be heard. There was no cardiac murmur and the heart was found not to be hypertrophied. Morphia and camphor were administered without effect. Prof. Senator was called in consultation. During the next two weeks attacks of heart failure occurred daily. Later they appeared less often, and finally, after 6 months, disappeared entirely. During the first weeks of the attack no abnormal physical signs referable to the heart could be discovered. Later, however, a distinct dilatation from right to left was noted, as was also an accentuated pulmonary sound and a low systolic murmur; as the patient recovered both the dilatation and murmur disappeared. The author believes the affection was brought about through irritation and subsequent paresis of the vagus nerve. Feilchenfeld (L.) Erkrankung des Herzens infolge übermässigen Lachens. Deutsch. med. Wchnschr., 1898, No. xxx, July 28.

Two Cases of Infectious Purpura.

The author reports two cases with bacteriological examination. The first was probably a hæmophiliac. There was no fever and the disease was cured in three weeks. Through puncture of a vein in the forearm an aerobic coccus was obtained, which stained according to Gram's method and grew in agar and serum, but not on gelatine. The second case was that of a man, 25 years of age, suffering from valvular heart disease, who died in thirty hours from a febrile purpura. The blood showed the presence of the streptococcus. The author believes that the diagnosis of infectious purpura should not be made alone from the presence of fever, since the bacteria present do not always give rise to a pyrogenic toxic substance. In addition there must be present some individual predisposition such as heart disease or hæmophilia. The cultivated microorganism did not give rise to purpura in inoculated animals. Deux cas de purpura infecteux. Med. modèrne, 1898, 225.

The Treatment of Hemorrhagic Nephritis.

The treatment pursued by the author consisted in the administration of methylene blue, o. 1 gm. three times a day. In three days the blood had entirely disappeared and the albumin was reduced, from ½ by volume, to a mere trace. This favorable condition remained for two years, when, after an excess, the blood in the urine and the other symptoms returned. They, however, again disappeared, upon the admistration of methylene blue, within three days. The same fortunate result was attained in three other cases. A number of other observers have recorded the favorable efiect of methylene blue in albminuria. Kramer. Zur Therapie der Nephritis hæmorrhagica. Petersburg med. Wchnschr., 1898. No. 30.

Reversal of the Muscular Contraction Formula.

Although the reversal of the contraction formula is no longer the surest indication of muscular degeneration, hav-

ing given place to the slowness of the contraction; still it is the most striking feature of the reaction of degeneration. Nevertheless it has never been made the subject of systematic research, nor has a satisfactory explanation of this phenomenon been offered. As a result of his researches, the author comes to the following conclusions: The increased cathodal contraction in healthy muscle is due to the fact that the cathode lies upon the point of greatest excitation and current intensity. In cases of degeneration, the point of entrance of the nerve into the muscle is the first to suffer and the degeneration proceeds from this point towards the ends of the muscle. The reversal of the contraction formula in muscle degeneration is due then to the fact that cathodal closing contraction at the entrance of the nerve fibre is no longer the point of greatest excitation, but that the anodal closing contraction calls forth a more pronounced contraction, in that the anode is at the point of greatest excitation. Wiener. Erklärung der Umkehr des Muskelzuckungsgesetzes bei Entartungsreaction anf experimenteller und klinischer basis. Deutsch. Archiv. f. klin. Med., Bd lx, Hft. 2 and 3.

Assistance to Expiration.

Mechanical assistance to expiration, which is very valuable in emphysema, mild asthmatic attacks, and in some forms of chronic bronchitis, can be attained without the help of mechanical apparatus or the aid of another person, in the following manner: The patient lies on his abdomen and crosses his arms on his back. A small pillow is placed under the chest and a second under the forehead. The soles of his feet are extended against the footboard of the bed. Upon expiration the patient, so placed, makes powerful extension of his legs in order to press his chest against the pillow. Gerhardt (C.) Beföderung der Ausathmung. Zeitschr. f. diët. u. physik. Therapie. Bd. i, Hefr. i.

Body, Form, and Position of the Kidney

The authors examined 24 Samoan woman, who had never compressed their waists by the use of corsets or tight articles of dress. In six they were able to palpate the right kidney and they believe that tight lacing is not the cause of palpable kidney. Observing that they were able by inspection of the bodily form to predict with remarkable certainty the existence of palpable kidney, the authors sought for some positive sign on which judgement might be based as to the presence or absence of this condition. By a series of measurements they obtained a formula which they employ as index. Index—pegulo pubic distance divided by circumference of abdomen x by 100. The larger this index the more likely that the kidney would be found palpable. Becher (W.) and R. Lennhoff. Deutsch. med. Wchnschr., 1898, xxiv, No. 32.

Epidemic Cerebro-Spinal Meningitis.

Wentworth advocates the lumbar puncture as one of the most accurate methods of diagnosis in this disease. Great care must be exercised in this procedure. Failure to obtain fluid may result from the fact of the needle not entering the spinal canal; or the needle may be within the canal but outside the dura mater. The needle may also be occluded by a blood clot or bit of skin. The latter source of error may be obviated by the use of a fine wire that is large enough to completely fill the lumen of the needle. If the lumen is found clear and fluid does not flow upon its withdrawal, the probability is that the needle is outside the dura. The needle should then be withdrawn slightly and again thrust in more toward the median line. The examination of the fluid should be both microscopic and bacteriological. There is no constant relation between the severity of the spmptoms and the turbidity of the fluid. Wentworth (A. H.) Lancet, Lond., Oct. 1898, No. 3918.

CLINICAL DIAGNOSIS.

UNDER THE CHARGE OF

ANDREW STEWART, PH. D.

Typhoid Fever.

The absence of leucocytosis is strong evidence that an existing fever is typhoid, malarial fever being excluded by absence of the plasmodium. If leucocytosis does occur in the course of an unmistakable case of typhoid it denotes some untoward indication. Both feces and urine should be carefully disinfected throughout the course of the disease. Too often directions to this effect are omitted by the attending physicians. Widal's reaction is diagnostic in many cases in which, at the time, the clinical findings are obscure. The value of serum diagnosis, as well as other methods, must be determined by the practitioner who controls the case upon whom the tests are made. H. Stuart MacLean. Miscroscopical diagnosis of typhoid fever. Charlotte Med. J., 1898, xiv, 405.

Indicanuria.

Dr. Charles E. Simon, in *The American Journal of the Medical Sciences*, concludes as follows: 1. The gastric juice possesses antiseptic and germicidal properties. 2. These properties are referable to the presence of free hydrochloric acid. 3. A subnormal amount of free hydrochloric acid will call forth an increased degree of intestinal putrefaction. 4. The conjugate sulphates form an index of the degree of intestinal putrefaction. 5. The increased intestinal putrefaction in cases of subacidity and anacidity of the gastric juice is largely referable to an increased formation of indol. 6. The elimination of indican in the urine may be regarded as an index of the amount of free hydrochloric acid present. 7. A normal acidity of the gastric juice is never associated with increased indicanuria. 8. Cases of ulcer of the stomach apparently form an exception to this rule, an increased indicanuria being usually associated with hyperchlorhydria. 9. In other cases of hyperchlorhydria a subnormal or normal amount of indican is eliminated. 10. Simple constipation is rarely accompanied by an increased elimination of indican. 11. Diarrhœa referable to a catarrhal condition of the colon, often following a previously existing coprostasis, as well as diseases of the colon in general, is not associated with an increased indicanuria. 12. In the differential diagnosis between ileus and coprostasis, a small amount of indican excludes the former condition. 13. In cases of achlorhydria with much lactic acid, the indican is not necessarily increased. 14. No indican, or but little indican, with delayed Günzburg potassium-iodide reaction, indicates the absence of free hydrochloric acid, with much lactic acid. Rev'd. (Med. Record, N. Y.), 1898, 54, 552.

Staining Malarial Parasites.

At the meeting of the Johns Hopkins Hospital Medical Society, of October 17th, 1898, Dr. Futcher said that during the past winter he and Dr. Lazear had developed a convenient method of staining the parasites in dry specimens, which was quick and serviceable for office practice.

The blood specimens are made in the usual way described by Ehrlich, making thin films on cover-slips, and are then fixed in a 1 per cent. solution of formalin in 90 per cent. alcohol. After immersion in this solution for only one minute the desired stain can be immediately used without washing off the excess of fixing agent. As a staining agent a saturated solution of thyonin in 50 per cent. alcohol is used, of which 20 c. c. are added to 100 c. c. of 2 per cent. carbolic acid solution, and this mixture is kept in stock for use as required. It is better to keep it for some time before staining specimens, as it improves with age.

The ordinary smear preparation is

made, fixed in the formalin solution for one minute, and without washing off the excess of solution, stained with thyonin for from ten to fifteen seconds. Ten seconds generally gives the most satisfactory results. The excess stain is washed off and the specimen, mounted in balsam, is ready to be examined.

The malarial parasites come out distinctly with this stain, and retain the color much better than when stained with methylene blue. The thyonin stain has also been used to bring out the flagellated processes in the estivo-autumnal infections, and some good specimens have been obtained.

Dr. Flexner had recently studied some specimens stained by Dr. Harris of Philadelphia with toluidin blue, in which other organisms were as easily made out as when stained with thyonin. He suggested that toluidin blue be tried to stain the malarial parasite.

Dr. Lazear said that toluidin blue stained the malarial parsite as satisfactorily as methylene blue, but that neither toluidin nor methylene blue stained as deeply as thyonin. (Rev'd in) Maryland Med. J. 1898, xl, 52.

Preparation of Specimens for Diagnosis.

Always label the specimen so that it may be distinguished from any similar one.

Be sure to tell how you prepared your specimen, and what you suspect it to be.

Sputum for Bacillus Tuberculosis.—Collect sputum from the patient early in the morning. That containing "cheesy masses" is the best. Put it in a small phial, stop securely and send by express.

Pus for Gonococci.—The pus may be collected on a cotton swab, placed in a phial, stopped securely to prevent evaporation, and sent by express. A better way is to spread the pus thinly on a "cover-slip" by means of a platinum wire, dry in the air, pack in cotton, and send by mail. Several slips had better be prepared, as the spreading may be too thick in some of them.

Diphtheria.—Swab out the throat with a sterile cotton swab, place in a sterile test tube, stop with cotton, and send by express.

Plasmodium Malariæ.—Cleanse the finger with a four-per-cent, solution of carbolic acid, then with alcohol, wrap tightly to produce a temporary congestion, prick with a new sharp needle, collect a large drop of blood on one slide, and with a second slide spread the blood over the entire surface at a single stroke. Several slides should be prepared, as some of them are likely to be imperfectly spread. The spreading should be done quickly before coagulation begins. These slides may be packed in cotton and sent by mail.

The Serum Test for Typhoid Fever.—The finger is wrapped and pricked. Three or four drops of blood are collected in a small phial, which is securely stopped and sent by express. An easier method is to collect the blood on a piece of filter paper, dry in the air, and send by mail. There should be at least one square inch of filter paper saturated with blood. This test is not conclusive before the second week of typhoid fever. Should a differential diagnosis be desired, both the serum test and the examination for the malarial organisms should be made.

Urine.—Urine for either microscopical or chemical examination should be a portion of the mixed urine of the whole day. But in hot weather, when decomposition begins early, a portion of the morning's urine may be used. Put four ounces in a bottle, stop securely, and send by express.

Water.—Water for bacteriological examination should be collected in bulbs prepared for the purpose. These may be obtained from any dealer in microscopical goods, or from a microscopist. Immerse the bulb several inches below the surface of the water and break off the point of the stem. The bulb will fill with water. Seal the stem in the flame of an alcohol lamp, pack in ice, and send at once by express. Several such bulbs should be prepared. In case the bulbs are not obtainable, a glass-stoppered bottle should be sterilized by boiling an hour. Then fill with water and seal with sealing wax and pack in ice.

Tumors.—Cut a specimen from the developing part of the tumor at least an eighth of an inch square. Put in alcohol and send by express. Always send a clinical description of the case and be sure to state the part of the body from which the tumor was taken. Hoyle, H. B.—How to prepare material to send to the microscopist. Charlotte Med. J., 1898, xiii, 152.

Nephritis without Albuminuria.

Carefully repeated routine chemical and miscroscopical examinations of the urine every twenty-four hours usually, but not invariably, detect acute and heronic nephritis.

The diagnosis of the albuminuric and the non -albuminuric types of the nephritides iscaided by searching examination of the vis era and parts, e. g., by disclosure of cardio-vascular changes, retinal involvement, etc.

These visceral and somatic changes, usually present in nephritis, may be lacking in concrete instances, or be capable of other or diverse interpretation, as polyuria, atheroma, etc.

The urinary findings most essential to the diagnosis of nephritis, may be lacking as may other signs and symptoms of minor dignity. Hence, as we fear, instinctively, as it were, the existence of nephritis in certain cases before we examine the urine, so we may still fear its existence after negative urinalysis.

Nephritis may be unattended by albuminuria. Such nephritis is usually intestinal in type, of which cases abound in literature.

While certain instances of non-albuminuric nephritis correspond to the type described by Dr. D. D. Stewart (Trans. Pan-American Med. Congress, 1893, p. 791.) yet non-albuminuric nephritis may not exactly correspond to said type, since acute nephritis, chronic parenchymatous nephritis, and chronic intestinal nephritis may exceptionally occur without albuminuria.

Casts should always be searched for; they are more constantly found than is albumin, yet they seem in certain instances to betoken rather renal degeneration than inflammation. They are not invariable in nephritis, nor are they invariably nephritic.

Future clinical caution and pathological examinations will probably increase the number of cases of non-albuminuric renal inflammations of acute, sub-acute and chronic types.

Non-albuminuric nephritis is of special importance (e. g. Stewart's type,) in life insurance and kindred examinations, and in practice, since prophylactic measures may be instituted and the prognosis obviously influenced. Edwards, A. R. The diagnosis of nephritis without albuminuria. Am. J. Med. Sciences, 1898, cxvi, 432.

Diagnosis Between Pyelitis and Cystitis.

In uncomplicated cases of pyelitis alkalinity of urine is not observed.

In cystitis the amount of albumin never exceeds 0.1—0.15 per cent., while in pyelitis it sometimes, when the pus is abundant, rises to 0.3 per cent and over.

When nearly all the pus cells are jagged in appearance it is a sign of pyelitis, as is also a chemical or morphological degeneracy of any blood cells present (when there is no tumor of the bladder and the hemorrhage is but microscopical). Another sign of pyelitis is the presence of the epithelial cells of the higher urinary tract as but mere shells. Rosenfeld, G., Zur Differential Diagnose zwischen Cystitis and Pyelitis. Berl. klin. Wochnschr, 1898, xxxv, 661.

Flagella Staining.

A 2 per cent. solution of largin (a compound of silver and albumin) takes the place of the silver nitrate heretofore used. This compound contains over 10 per cent of silver and is not precipitated by either albumin or chlorides. Excellent results are obtained. Stephens, J. W. W. Van Ermengem's method of staining flagella; a modification. Lancet, Lond., 1898, ii, 874.

BIOCHEMISTRY IN RELATION TO MEDICINE AND HYGIENE,

UNDER THE CHARGE OF
E. A. DE SCHWEINITZ, Ph. D., M. D.
Director Biochemic Laboratory, B. A. I., Agricultural Department.

The Development and Vitality of the Pneumococcus in Different Serums.

The serum of men and of animals when used as culture media presents very great differences in regard to the vitality and virulence of the pneumococcus, depending upon whether the species from which it is derived is sensible or refractory to this germ. The studies of the authors have been made upon the serum of the rabbit, dog, chicken, cattle, horse, guinea pig and man, either healthy or infected with the pneumococcus. A great difference is noticed in the effect of the serum from a young rabbit and that of a very old rabbit. In the serum of a young rabbit, say two months, the pneumococcus has grown well after 24 hours at 37 degrees. The vitality in this media is always relatively short however, generally from four to five days, and it has not exceeded two weeks. In the serum of an old rabbit, of two years for example, the same microbe develops less satisfactorily. The medium remains clear, and microscopical examination shows comparatively few diplococci. If the rabbit is very old the serum remains clear up to the time of the death of the germ. If the animal is younger it presents a more cloudy appearance. The life of the microbe in the serum of the old rabbit is not limited. With regard to the serum from man, cultures made upon that obtained from an infant are abundant, while those made upon the serum from an adult or an older individual, are poor and clear. The age of an animal modifies very markedly the susceptibility towards the pneumococcus. Young individuals of different species considered resistant to the pneumococcus are in reality very susceptible to these microbes, while older individuals of the susceptible species are very resistent. This connection of the age of the animals with their susceptibility for the pneumococcus can be found by cultivation of the microbe upon the serum. Young individuals of resistant species give a serum in which the pneumococcus grows as well as in those of susceptible animals. Recherches sur le mode de développement et la vitalité du pneumocoque dans les divers sérums. F. Bezancon and V. Griffon, Soc. De Biol. Vol V. Feb., 1898.

The Motility of Tubercle Bacilli.

The author claims that while working in the laboratory of Prof. Uchinsky he has often noticed in the hanging cultures of the tubercle bacilli decided motility. If a small particle of a tuberculosis bouillon culture, which is covered with a thin bacteria layer, is removed by means of a platinum wire to a cover glass, the following appearance can be noted under the microscope. The main portion of the layer appears perfectly at rest, but on the sides a number of separate bacteria can be seen which possess often a very active motility. These bacteria vibrate and change their position so that one sees them first longitudinally and then horizontally, and the bacteria swim slowly from place to place. If the preparation is preserved from drying this motility can be seen to last for about forty-eight hours, which excludes the possibility that this apparent motility is due to the Brownian molecular motion. This motilty is still more noticeable if the preparation is made from a compact bacterial mass taken from a glycerine agar culture and a few drops of sterile bouillon. The same motility is noticeable in bacteria that have been grown on artificial media. Ferran is the only one who had previously observed the motility of the tubercle bacilli. The Koch bacil-

lus very probably owes its motility to the flagellae, but the author was unable by any methods used to stain these.—Ueber die Beweglichkeit der Tuberkelbacillen. W. Schumowski, Centralbl. f. bakt., 23, No. 19, 1898.

The Detection of Boric Acid in Meat and Sausage.

Ten grams of meat or sausage as free as possible from fat are cut into small cubes and placed in a suitable cylinder or flask with a mixture of 2 c. c. glycerine, and 4 c. c. alcohol and 4 c. c. water, and a few drops of hydrochloric acid sufficient to give acid reaction. This mixture is cooked for a minute and filtrated. The filtrate is then tested by means of curcuma paper. In the presence of boric acid it is colored a cherry red or brown red, which should not be soluble in water and should become blue-black upon the addition of amonia. The author thinks that the method recommended, the flame test, may be misleading, as under certain conditions it is possible that ethyl or methyl chloride might be formed which would burn with a green flame similar to that given by boric acid. Hafelin Zum Nachweis von Borsaure in Fleisch- und Wurstwaren. (Nacheinem referat d. Ztschr. f. angew. Chemie, 1898, H. 6, a. d. Pharmaz. Ztg. 1897.

How Certain Organs Act With Regard to Diphtheria Toxins.

In an article entitled "The Contents of the Antitoxin in the Blood and Organs of Horses Immunized to Diphtheria" recently published, one of the authors expressed the idea that the toxins introduced into the organism were changed to antitoxin by chemical modification. A method for proving this consists in allowing a current of blood added to toxin to pass through organs which have just been removed from an animal. By means of a specially arranged appliance, fresh defibrinated blood, mixed with different quantities of toxin, is forced through the circulation of an animal that had just been bled to death from the carotid artery. The results of the experiment show that blood which had been mixed with 1 c. c. of toxin before circulation through the animal body, after the circulation, acts upon guinea pigs in the same way as before. When this mixture was passed through the liver no appreciable action upon the toxin was observed. The spleen and kidneys did not seem to exert any action in transforming the toxin into antitoxin. Dzierzyowski (M. S. K.) and Onufrowicz (M. C. J.) Recherches expérimentales sur la question de savoir comment certains organes se comportent á l'égard des toxins diphthéritiques. Arch. des sci. biolog., St. Perersb., 1898, vi, No. 1.

Therapeutic Notes.

A Perfect Aseptic Hypodermic Syringe.

Dr. N. Allen Heaton, of Washington, D. C., writes "Sharp & Dohme's Aseptic Syringe has been adopted by the surgeons of the New York Hospital. It is far superior to any upon the market, and will do more to assist and advance hypodermic medication than any single improvement of which I am at present aware."

The Best Treatment for Rectal Ulcers.

Dr. Otto Juettner, of Cincinnati, reports the following as the best treatment in rectal ulcers:

R. Micajah's Wafers, ii.
Ol. Theobrom., q. s.
M. Sig. Suppos. iv.

One every evening followed by a warm rectal irrigation next morning. The proctoscope should be used twice every week and the ulcer inspected. Of course the above directions can be modified and adopted to individual cases.

Standard and Satisfactory Remedies.

Dr. E. S. Vawter, of Bent Creek, Appomattox Co., Va., in writing Battle & Co., for a sample of Ecthol, takes occasion to say that he is well acquainted with their preparations, Papine, Bromidia and Iodia, and uses them in all cases in which they are specified. He regards them as standard remedies with the profession, which give satisfaction whenever used, and recommends them to all physicians unfamiliar with their potency.

Milk Infection.

A well known physician writes as follows : "I have just had an opportunity of seeing the wonderful value of Imperial Granum in Milk Infection. I ordered the baby to be fed on Imperial Grenum, prepared with pure water only, increasing by one teaspoonful the quantity of Imperial Granum directed to be used when prepared with milk. An immediate improvement and most satisfactory recovery of the case was the result.

The Sensible Treatment of La Grippe and its Winter Sequelae.

The following suggestions for the treatment of La Grippe will not be amiss at this time. The patient is usually seen when the fever is present. First of all the bowels should be opened freely by some saline draught. For the severe headache, pain and general soreness give a five grain Antikamnia Tablet, crushed, taken with a little whiskey or wine, or if the pain is very severe, two tablets should be given. Repeat every two or three hours as required. If the pain, muscular soreness and nervousness continue, the most desirable medicine to relieve these and to meet the indication for a tonic, are Antikamnia and Quinine Tablets, each containing 2½ grains Antikamnia and 2½ grains Quinine. One tablet three or four times a day, will usually answer every purpose until health is restored. Dr. C. A. Bryce, Editor of "*The Southern Clinic*" has found much benefit to result from five grain Antikamnia and Salol Tablets in the stages of pyrexia and muscular painfulness, and Antikamnia and Codeine Tablets are suggested for the relief of all neuroses of the larynx, bronchial as well as the deep seated coughs, which are so often among the most prominent symptoms. In fact, for the troublesome coughs which so frequently follow or hang on after an attack of Influenza, and as a winter remedy in the troublesome conditions of the respiratory tract there is no better relief than one or two Antikamnia and Codeine Tablets slowly dissolved upon the tongue, swallowing the saliva.

Blood Counts in Surgical Covalescence.

Dr. Stuart McGuire, of Richmond, Va., has used Gude's Pepto-Mangen in 20 unselected cases following major operations Eleven of these cases were private patients in St. Luke's Hospital and nine were clinic cases at the Virginia Hospital. When it is remembered that the patients were all confined to bed ; that they were recovering from the effects of serious surgical operations ; that they were subjected to the depress-

ing influence of hospital life, the average increase in the red blood corpuscles is remarkable. A careful perusal of the histories of these cases and the summaries of the blood counts, which were published by Dr. McGuire in the Virginia Medical Semi-Monthly, August 12th., 1898, will convince the most sceptical, if there are any such now, of the extraordinary value of the Pepto-Mangan (Gude.)

New Brochure.

We are in receipt of a copy of Mulford Company's 1898 Antitoxin Brochure recently from press. It is a great improvement on that of last year for which there was an unexcelled demand and is a valuable reference book for physicians. The subjects of antitoxin dosage, symptomatic treatment of cases seen late and immunization are the best and fullest ever given. There is a novel and valuable section on official reports on the use of antitoxin which will be highly appreciated. The book is handsomely finished, and is easily without parallel in trade literature. It should be in every physician's office. The book is mailed gratis upon receipt of request.

Pelvic Inflammation.

Whether this troublesome condition exists in the perineum or the cellular tissue as the results of gonorrhea. abortion, natural labor, menstrual flow, or traumatism, without scrupulous care and cleanliness pyogenic bacteria will often obtain access to the genital canal and bring about serious results. While the treatment is divided into medical and surgical, antiseptics are depended upon largely in both cases, care being exercised in the selection of nontoric antiseptics. We know of no better antiseptic for such conditions than Tyree's Antiseptic Powder. Prof. S. Jervois Aarons, M. D. Edin., C. M., says : "Tyree's Antiseptic Powder, two drachms to one pint, used in the form of a douche, is a very useful preparation."

Minden, Mich., May 21, 1883.

Your favor of the 16th inst., came to hand, this afternoon. I have written nothing to you concerning your Syr. Hypophos. that I am ashamed of, and you are at liberty to use it as may seem best to promote your interests, but more especially that of suffering. I feel assured that if your Hypophos. were more extensively used and judiciously persisted in, that many who fall before the dreaded slayer would, to-day, be enjoying a fair modicum of health.

My wife is a subject of tuberculosis. but, to-day, although she has been the mother of eight children and had many a hard spell of coughing, I will put her into any company of young ladies of about 18 years, and wager any amount of money that she will pass for one of the youngest. This is a true triumph of your Hypophos. And our darling youngest boy, when all other means failed, was cured by it, and the county does not contain, this day, a healthier looking lad of four years of age.

I am a graduate of the University of Michigan, and have continuously practiced medicine for 20 years, and claim to know a little about consumption and its lion-like strength, but I do sincerely believe that I have often taken him by the jaws through the Hypophos. and trampled him under my feet. I have, however, in times past, followed old and new lights until I fairly despaired, but of late have settled down in pleasing light in the use of the Hypophos. and your syrup, as I told you in particular. But enough. May you long continue to supply the "healing fraternity" of the United States with your pure syrup, is my sincere desire.

Fraternally,
A. N. Johnson, M. D.

The physicians of Washington should remember that the Diphtheria Antitoxic Serum made in the Pasteur Institute, Paris, France, under the direct supervision of Roux, and the Antistreptococcus Serum produced in the same institution under the direction of Marmorek. are for sale by W. C. Downey & Co., (The Portland Drug Store,) who are sole agents in this city for these preparations. All are aware of the potency and effectiveness of these serums. Note the exceedingly low prices which are asked for them.

Roux's Diphtheria Antitoxin :
2500 Units in 10 c. c.—$2.50.
2500 " " 5 c. c.—$3.00.
Marmorek's Antistreptococcus Serum :
10 c. c.—$1.50.

TRANSACTIONS OF THE MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA.

EDITING COMMITTEE:

W. W. JOHNSTON, M. D., GEO. M. KOBER, M. D., JAS. D. MORGAN, M. D.

MEETING OF APRIL 27, 1898. Dr. S. C. Busey, President, in the Chair.

A TRAGEDY OF THE GREAT PLAGUE OF MILAN IN 1630.

BY ROBERT FLETCHER, M. D.

In early Bible history there are records of the utter destruction of temples or even cities, the removal of every stone which marked their existence, and the sowing of the ground with salt, so that it might ever after be sterile. Of the efficacy of the latter part of the proceeding, some doubts might be entertained. In more modern times the residence of some notorious criminal has, in like manner, been destroyed and removed with the solemn declaration by the State that the ground upon which it had stood should be held as accursed, and that no building should ever be erected upon it. There are two noteworthy instances in which, in addition, a stone column with an inscription describing the crime and its punishment was erected upon the site of the dwelling of the criminal. The first in order of date is still in existence in Genoa. A certain Julius Cæsar Vacchero, known as the "richest merchant of Genoa," entered into a conspiracy in 1628 to destroy the republican government of Genoa and to deliver the State to the Duke of Savoy. He was beheaded with many of his fellow conspirators, his wife and children were banished, and by a decree of the Senate his palace was razed to the ground, every stone removed, and a pillar with an inscription devoting him to "eternal infamy" was erected on its site. A naval officer*, who visited the spot a few years ago described to me the desolate appearance of this vast space of ground overgrown with brambles and weeds, with the weather-beaten stone pillar in its center. In reply to his enquiries, no one could tell him anything of the story connected with the place, only that the ground was "accursed," and the pillar was "*colonna d' infamia.*"

The other column was erected in Milan, in 1630, and the tragedy it commemorated is the subject of the present sketch.

*Captain Greer, now Rear Admiral Greer, U. S. N. (Retired). He copied the inscription, which corresponds exactly with that given in the account of Vacchero's conspiracy in the *Archivio storico d' Italia*, an important collection of public documents published by the Italian Government, and amounting to nearly a hundred volumes.

Traditions of the terrible pestilence known as the Black Death, which ravaged Europe in 1348, and which, according to estimates made from such sources as were accessible, swept away one-third of the inhabitants of the known world, were still rife in Milan when the great plague of 1630 broke out in that city. A writer has left a vivid description of the conditions brought about by the former visitation. He says:

"Wild places were sought for shelter; some went into ships and anchored themselves afar off on the waters. But the angel that was pouring the vial had a foot on the sea as well as on the dry land. No place was so wild that the plague did not visit—none so secret that the quick-sighted pestilence did not discover—none could fly that it did not overtake.

"For a time all commerce was in coffins and shrouds, but even that ended. Shrift there was none; churches and chapels were open, but neither priests nor penitents entered—all went to the charnel-house The sexton and the physician were cast into the same deep and wide grave; the testator, and his heirs and executors were hurled from the same cart into the same hole together. Fire became extinguished, as if its element had expired, and the seams of the sailorless ships yawned to the sun. Though doors were open and coffers unwatched, there was no theft; all offenses ceased, and no cry but the universal woe of the pestilence was heard among men."

There is nothing more cruel than fear, and no fear more debasing than that which is engendered by the presence or approach of a pestilence. We have not been without some experience of this in our own day, but when we add to this ignominious cowardice, the gross ignorance and superstition which existed at the period of which I am about to speak, we can nnderstand, partly at least, how such a story became possible.

Manzoni, the famous Italian writer, the author of the best romance of the century in his language, "*I promessi sposi*," "The Betrothed," has told the story of this Milanese column in a small work published in 1840, *Storia della Colonna infame*. It has not been translated into English, though there is a French version of it.

The column in question was erected in 1630, and was blown down during a storm, in 1788. The inscription upon it was in Latin, which, in its construction, very closely resembles some portions of the inscription on the Genoese pillar. The literal translation of it is this:

"Here, where this plot of ground extends, formerly stood the shop of the barber Giangiacomo Mora, who had conspired with Guglielmo Piazza, Commissary of the Public Health, and with others, while a frightful plague exercised its ravages, by means of deadly ointments spread on all sides, to hurl many citizens to a cruel death. For this, the Senate, having declared them both to be enemies of their country, decreed that, placed on an elevated car, their flesh should be torn with red-hot pincers, their right hands be cut off, and their bones be broken; that they should be extended on the wheel, and at the end of six hours be put to death, and burnt. Then, and that there might remain no trace of these gnilty men, their possessions should be sold at public sale, their ashes thrown into the river, and to perpetuate the memory of their deed the Senate wills that the house in which the crime was projected shall be razed to the ground, shall never be rebuilt, and that

in its place a column shall be erected which shall be called Infamous. Keep afar off, then, afar off, good citizens, lest this accursed ground should pollute you with its infamy. August, 1630."

This barbarous sentence was executed in all its details, and for a hundred and fifty years, this pillar, intended to blast the memory of two really innocent persons, stood as the proof of the ignorance and credulity of their judges. In 1777, a certain Count Pietro Verri, Councellor of State in the service of the Empress Maria Theresa, wrote a work which, however, did not see the light until 1804, twenty-seven years later, entitled (translated) "Remarks upon torture, with special relation to the effects of the baleful ointments to which was attributed the plague which devastated Milan in the year 1630." Count Verri had carefully perused all the records of the trial of Piazza and Mora, and while pointing out the injustice done these wretched men, he decried in good set phrase the legalized use of torture. It is not surprising that he delayed the publication of his treatise. As late as 1768 the Empress Maria Theresa had authorized the publication of a codification of the laws relating to the use of torture by the courts. The judicial application of torture, or "the question," as it was termed by a delicate euphemism, comes down from the Roman code of laws. Count Verri quotes from the writings of many jurists as to the rights of the accused, and the power of the judges, in cases where it was necessary to extract the truth. The late Dr. Welling, of Washington, delivered an address on the law of torture, giving the codification of Guazzini, a famous Italian jurisconsult, which was published in 1612. There is a wonderful resemblance in the provisions of all these laws as described by Guazzini, Verri, and the later codification of Maria Theresa. Great discretion was given to the judges, but they were forbidden to apply the torture in any case more then three times. If the accused, appropriately named *l'afflitto*, the sufferer, bore these three administrations without confessing, then he was to be held guiltless as by Divine decision. In the "Ancient customs of Brittany," a very curious compilation made in 1330 and 1340, the same limitation was made, and if the accused bore it all without yielding, then he was to be, in the language of the compiler, "Safe and free, because it was evident that God exhibited miracles for him."

Another provision of the law regulating the application of torture, which was violated in the case in question, was that which forbids its use for the discovery of the *corpus delicti*, which must appear *aliunde*—from other sources—but only for the purpose of discovering the author and accomplices of the crime. Here there was certainly neither dead body nor injured person.

The preparation of the accused for the torture was ceremonious. It was a general belief of the times that an amulet or compact with the evil one which would enable him to endure the cruelest suffering, and thus evade the desired confession, might be concealed in his clothes, hair, or even in his stomach or bowels. His clothing was therefore changed, every particle of hair was shaved off, and a purgative was given him, so that he might be effectually deprived of all diabolic aid. Piazza was thus prepared every time that he was tortured.* The belief in this protective

*"Abraso prius dicto Guilelmo, et vestibus Curiæ indutо, propinata etiam potione ea purgante." (Processo [etc.], p. 41.)

power was of ancient date. A distinguished Italian magistrate,† in a work on criminal law published in 1532, states that an accused man revealed the secret of his ability to resist torture and refrain from cries or disclosures. He confessed that one of his relatives had prepared for him a cake of wheat flour, to which was added the mixed milk of a mother and daughter. Every day he was to swallow some crumbs of this cake, and as long as it lasted it insured his insensibility to torment. On the other hand, there were certain liquids and greases which, rubbed into the body of an accused person, counteracted all his protective charms, and, says Marsiliis, with cynical exultation, "when that was done one could hear the joints crack and the bones sing." M. Le Blanc* says that these counter-charms were known in England in the 12th century, in Italy in the 14th century, and in China to quite recent days.‡

The original account of the proceedings which led to the tragic end of Piazza and Mora is that of the Canon Ripomonti. He was born in 1577, and was historographer of Milan. He published the first ten volumes of the Ecclesiastical History of Milan in 1617, and by request of the Decurions wrote an account of the plague which devastated the city in 1630. This latter is a quarto book of 410 pages, written in Latin, and published at Milan in 1641. The title-page is a copper-plate engraving, curiously emblematic. There is a gigantic skeleton filling the entire page; his hands hold weapons, armor and books of devotion; his bony feet protrude from under a carpet on which lies a man, the victim of the plague. In front of the skeleton is an altar with a crucifix, to which a woman, seated, with the usual naked boy attending her, points with a sword.

Two hundred years later, in 1841, this work was translated into Italian by Francesco Cusani, who has added many valuable notes in an appendix.

In 1839 the full official account of the trials of the "Anointers" was published in Milan.‡ It is in Italian, but all that relates to the applications of the torture is discreetly veiled in the less familiar Latin, which, however, the modern editor has translated into Italian.

From these sources the facts have been obtained, now to be briefly presented.

Early in the morning of the 21st of June, 1630, during the prevalence of the plague in Milan, a woman of the lower classes saw from her window a man going down the street who was writing on a paper. He wiped his fingers on the wall of a house, probably to get rid of ink-stains, but with the readiness of ignorance and fear, she was sure that he was smearing deadly ointments to promote the spread of the pestilence. A crowd of excited women invaded the Council Chamber, and the Senate was informed of the occurrence. Orders were immediately given to trace out and arrest the guilty man.

It must seem strange to us that the rulers of a great city, even at that time, could have been so ignorant as to believe that such a means could be productive of the pestilence, or that any man or men could desire to destroy their fellow-citi-

†Hippolytus de Marsiliis. Practica criminalis [etc.]. fol., Venetiis, 1532, fol. 12.

*Le Blanc, [Edmond]. De l'ancient croyance à des moyens secrets de défier la torture. Paris, 1882, p. 14.

‡Bodin states that magic words conferring immunity under torture were sometimes written on the scalp of sorcerers, where it was concealed by the hair. (De le démonomanie des sorcieres, 1587.)

‡Processo originale degli Untori nella peste del 1630. Milan, 1839, 8°.

zens, and risk their own lives besides. But extraordinary occurrences demanded extraordinary causes to account for them. The plague was attributed to hail, to the poisoning of the fountains by the Jews—to deadly ointments so placed that passers-by would touch them. It became dangerous for any one to touch walls or buildings. Ripamonti relates that three French travelers admiring the facade of a building, one of them touched the marble, and was immediately set upon by the mob and dragged half dead to the prison. An old man, 80 years of age, about to sit down on a bench in the church of San Antonio, wiped off the dust with his cloak. A woman cried out that he was annointing the benches, and even there, in the house of God, the worshipers beat and kicked the life out of the unfortunate man. Such was the spirit of the time.

The earliest notice, perhaps, of this belief in "Anointers" is to be found in the works of Guy de Chauliac, who was physician to Pope Clement VI and was living in Avignon, in 1348, when the Black Death ravaged that city. He says: "It was believed that the Jews had poisoned the world, for which reason they were slain. In other places they drove away beggars after cutting off their ears * * * and if it was found that any one had powders or ointments, he was compelled to swallow them, to show they were not poisons.*

Ambroise Paré, in his *Livre de la Peste*, throws further light on the matter. In his advice to Magistrates, during the visitation of the pestilence, he concludes the chapter thus:

"What shall I add? They must keep an eye on certain thieves, murderers, poisoners, worse than inhuman, who grease and smear the walls and doors of rich houses with matter from buboes and carbuncles, and other excretions of the plague-stricken, so as to infect the houses and thus be enabled to break into them, pillage and strip them, and even strangle the poor sick people in their beds; which was done at Lyons in the year 1565. God! what punishment such fellows deserve; but this I leave to the discretion of the Magistrates who have charge of such duties."†

The scrivener, with the ink-horn at his belt, was discovered, and proved to be a certain Guglielmo Piazza, a commissioner of health, a petty officer employed to report cases of the disease. He stoutly denied all knowledge of the crime charged to him, and maintained his resolution through two applications of torture, although the second one was the "question extraordinary," in which atrocious complications were added to the ordinary proceedings. But in his cell, broken down with the effects of the torments he had twice experienced, and dreading their renewal, which he knew would come, the unhappy man yielded to the insidious suggestions of those around him. He confessed his guilt, and declared that he obtained the death-dealing ointment from the barber Giangiacomo Mora. The latter was immediately arrested, but was likewise vehement in his declarations of innocence, avowing that he had never seen or known Piazza. The latter was made of sterner stuff than the barber, who yielded at the first application of the torture, and confessed everything they suggested to him. From that time on these two wretched men vied with each other in manufacturing falsehoods. They implicated even a Count Padilla, the son of the Commandant of

*Cyrurgica, 1499, fol. 19.

†Œuvres, 1575, fol., p. 662

the Castle. He was arrested, but having powerful friends, his trial did not take place until long after the execution of Piazza and Mora. It was from the documentary evidence on his trial that Count Verri obtained the full details of the iniquitous treatment of the two victims who had perished. Count Padilla was ultimately acquitted.

Mora, the barber, had a wife and five children; the eldest, a young man, assisting him in his business. The latter was arrested with his father, and the entire contents of the shop were seized and carried to the court. As usual in those days, the barber dabbled in medicine, and he declared, no doubt with truth, that the various pans and vessels contained remedies for or preservatives from the pest. The sale of these specifics was very extensive. A man who was hanged for robbery during the height of the pestilence confessed, with the rope around his neck, that he had prepared an ointment as a charm against the Anointers. Cusani, in his notes, gives the formula of what became known as Unguento dell' Impiccato, "The ointment of the hanged man." It may take its place with the "Vinegar of the four thieves," which had its origin during the plague of Marseilles. Its composition was supposed to be: Wax, 3 ounces; Olive oil, 2 ounces; Oil ivy, Oil stone, Leaves of Anethum, or dill, Laurel berries, Sage and Rosemary, of each ½ ounce. A little vinegar was added.

It is interesting to observe that these remedies, or preventatives, were composed almost entirely of aromatics, some of which furnish the accepted germicides of our own day. The apertures of the body were to be especially guarded by applications of these waters or tinctures. Ambroise Paré recommends that a surgeon called to attend patients with the plague should first be purged and bled. Next he should have two issues made, one at the insertion of the deltoid of the right arm, and another about three fingers' breadth below the left knee. He considerately adds that these need not be made if the surgeon has already any running sore. "For truly," he declares, "we know from experience, that they who have such open sores, have not been subject to the plague, and have taken no harm, though they were every day among cases of it."*

Paré also gives a formula of a "Preservative water," with which the surgeon was to wash his whole body "very frequently," and he adds, "it is a good thing to wash the mouth with it, and draw a little of it up the nose, and put a few drops into the ear."

This preservative consisted of a mixture of rose water, elderflower water, and wine, in which were boiled, by slow heat, the roots of inula, angelica, gentian, bistort, and zedoary; also the leaves of sage, rosemary, wormwood and rue; juniper and ivy berries with lemon peel, and the mystic theriac and mithridate were finally added.

As a proof of the danger of contact with the bodies of infected persons, Paré relates in his vivid style how he himself nearly fell a victim to a sudden deadly syncope, the result of the overpowering effluvia which arose from the buboes and carbuncles of a plague-patient, as he uncovered him. Upon regaining consciousness he sneezed violently ten or twelve times, so that his nose bled, and he attributes his escape to "virtue of the expulsive power of his brain, seeing that all the other faculties were dead for the time."†

Op. Cit., 663

†*Op. Cit.*, p. 664.

The barber's acquaintance with Piazza seems to have been limited to occasional visits of the latter to his shop for the usual service of his trade, and they both stated that Mora had undertaken to prepare a pot of his "preservative" for his customer. On this slight foundation was built a superstructure of conspiracy for wholesale murder, by the never-failing power of torture. Once in his agony, the wretched barber cried to his judges that if they would tell him what they wanted him to say, he would say it! He confessed everything that was insidiously suggested, such as that he had mixed foam from the mouths of those dead of the plague with his ointment, and then declared that Piazza, whose business took him among the dead bodies, had supplied him with the material.

In the account of the trial there is frequent allusion to the "purging infamy" of the accused. A Roman law, given by Justinian,† provides that gladiators, slaves, and infamous persons like them, when called as witnesses, should be first put to the torture so as to insure their telling the truth. In like manner, in the Italian laws regulating the legal application of torture, the accused person was declared to be "infamous," and his implication of others in his crime was not to be accepted as proof, unless he maintained his charge while subjected to torture. If he then reiterated his declaration he was said to have "purged his infamy," and his evidence was admitted. Piazza, as he involved others in his accusations, was, on each fresh occasion, tortured to "purge his infamy," and to thus make his charges applicable. The degree of suffering inflicted upon him seems to have been much lighter than on other occasions. He had been promised immunity from his sentence by the Auditor of the Court if he made full confession, another instance of the treachery of these officials, for the Governor only could exercise such power.

More than once, Piazza and Mora recanted, and declared that their confessions were false, and uttered only in fear of further torments. A threat of another application of the question, and above all, the hope that if no longer recalcitrant they might expect some mitigation of the horrible punishment which had been decreed as their fate, soon reduced them to submission. They were in the hands of men who were destitute of pity. The plague was raging, and the populace, fierce and ignorant, demanded their victims. The Commandant of the Castle, the father of Count Padilla, who had been accused of complicity of the alleged crime, demanded of the Court that the execution of the sentence on Piazza and Mora should be delayed in order that they might be confronted with his son and their accusations met. The judge refused to accede to his request on the ground that "the people were clamorous."

When the condemned men found that their examinations were at an end, and that, despite the promises of impunity, they were to be submitted to the full execution of their terrible sentence, they retracted in their confessions to the priest all the charges they had made against other persons, declaring that they were made under the agonies of torture, or in the apprehension of further suffering.

In the collection of medical portraits and engravings in the library of the Surgeon-General's office, at Washington, is an elaborate print, representing in all its details the execution of Piazza and Mora.

The engraving, which is from a cop-

†Digest, *lib.* XX, *tit.* V, *de testibus*, 1, 21.

per-plate, is about sixteen inches square. It was published in Rome by the authority of the Nuncio of the Roman College. The engraver was Horatio Colombo. There is no date, but it is probable that it was brought out close upon the event it commemorates.*

The title on the top is (translated), "The sentence pronounced on those who had poisoned many persons in Milan in the year 1630." This is followed by the names of the Magnificos who sat in judgment, and the particulars of the punishment decreed. Each scene in the picture has its letter, which is referred to in an explanatory legend below. The entire disregard of the unities of time and place which characterized such productions is well displayed in this curious engraving. On the right is the shop of the barber Mora, and in front of it the "Column of Infamy" is already erected. A large platform car, drawn by two oxen, exhibits the victims, executioners and priests. A brazier of live charcoal contains the pincers with which the flesh was to be torn. The barber's right hand is on the block, and a chopper held over the wrist is about to be struck down by a wooden mallet held aloft by the executioner. Further on is seen a large platform, on which the two victims are having their limbs broken by an iron bar, preparatory to their exposure on the wheel for six hours. The wheels are also displayed, one of them already on a pole, with the men bound upon it.

Still further on are the fires consuming the bodies, and, last scene of all, on the extreme left is a fussy little stream foaming under bridges, which is supposed to be a river, and into it a man is throwing the ashes of the two malefactors.

Comment upon this tragic occurrence is needless. It tells its own story and bears its own moral.

A few words may be added as to the mortality of this pestilence and the measures adopted by the authorities to encounter it. Like all statistics of those early times, the estimates are variable, but there are letters from the Sanitá to the Governor which state the then daily mortality at 500. It is probable that the total number of deaths was about 150,000.

The tribunal of the Sanitá, a body something like a modern board of health, seem to have acted with sense and energy, though impeded by the obstinacy and ignorance of the Senate, the Council of Decurions and Magistrates. To declare that the plague had appeared in Milan was to drive the people off, and to frighten trade away. The two physicians of the Sanitá, Taddino and Settala, scarcely dared to appear in the streets, and the latter, who was 80 years old, nearly lost his life from the angry mob. Later, when the existence of the pestilence had to be admitted, some strange precautions were adopted. An immense procession was to proceed through the city in honor of San Carlo and to implore his aid, and the authorities ordered the doors of all sequestered houses to be nailed up lest the distempered inmates should try to join the procession. There were 500 such houses, according to the Cavalier Somiglia, who also wrote an account of this fearful time.

An immense hospital was constructed to accommodate 2,000 persons, though at one time, in the height of the disease, the number of its patients had increased to 16,000. The pits dug for the dead

*In the Processo originale degl' Untori, Milan, 1839, there is at the end a folding plate, which is a poor copy of this engraving. The editor speaks of the original as "una stampa di quel tempo."

became filled, and bodies in all stages of putrefaction were lying in houses and in the streets. In despair, the Sanitá applied to two priests who had been efficient in their aid. They promised that in four days all the corpses should be removed. They went into the country, and summoning the people in the name of religion, they succeeded in having three immense pits dug. The *monatti* of the Sanitá were employed to bring out the dead, and in the stipulated time the good fathers had fulfilled their pledge. The persons in the employ of the Sanitá for removing corpses were of three grades. The *monatti* carried the bodies out of the houses and carted them to the pits. The *apparitori*, or summoners (the name is still preserved in the English Ecclesiastical Courts as apparitors) went before with a bell notifying the people to bring out their dead. The *commissari* were in control of the other two. It will be remembered that the unfortunate Piazza was a commissario.

Among the precautions taken by physicians for their own protection, while visiting plague-stricken patients, was the adoption of a particular dress. Paré recommends that the material should be camlet, serge, satin, taffeta, or morocco, but not cloth, frieze, or fur, lest these latter should harbor the poison, and death should be thus conveyed to the healthy. Manget, in his Traité de la peste (Genève, 1721, 2 vols.), has a frontispiece to the first volume representing the dress of a doctor during the plague at Marseilles. From his description it seems that the mantle, breeches, shirt, boots, gloves, and hat, were all of morocco leather. The beak attached to the mask was filled with aromatics, the air passing over them in respiration. Figure 2 is a reproduction of this plate from Manget's work. In a recent number of Janus (Amsterdam, 1897, p. 297), M. Reber gives an interesting account of an engraving in his possession, the work of the artist John Melchior Fuesslin, which also represents a doctor at Marseilles during the plague, and is, he thinks, of about the same date as the work of Manget. His engraving is herewith reproduced as Fig. 3. The legend underneath may be translated :

"Sketch of the Cordovan-leather-clad doctor of Marseilles, having also a nose-case filled with smoking materials to keep off the plague. With the wand he is to feel the pulse."

In Manget's sketch the *Stöcklein* becomes a veritable stick, but the information conveyed by it would probably be quite as useful in one case as in the other. The appearance of this leather-clad doctor, with his *nez fumant*, could scarcely have been reassuring to the plague-stricken wretch.

Since this address was written I have received the March number of the Bristol Medico-Chirurgical Journal, which contains a notice of the Manget and Reber sketches by Dr. L. M. Griffiths, the accomplished assistant editor. He reproduces the plates from the Janus blocks, and mentions that an amulet of arsenic was worn on the chests in time of plague, as a prophylactic, in the city of Bristol, as well as elsewhere. He quotes Kemp's treatise, 1665, thereanent. Ambroise Paré had, however, recommended this device a hundred years before. It was to be worn over the heart, in order that "the heart might become accustomed to poison, and so be less injured when other poisons sought it."

MEETING OF MAY 4, 1898.

Dr. GEO. M. KOBER, Vice President, in the Chair.

Dr. Smith offered the following resolution which was adopted:

Resolved. That the Committee on Public Health be requested to investigate and report on the plumbing regulation of this City which requires the use of lead pipes for conducting water from the mains into dwellings; and to specially consider the question of danger of lead-poisoning through the operation of this regulation.

Dr. Stone presented the following pathological specimens:

1. Fibroid of Uterus with Pus Tube.
2. Adenoma of Breast.
3. Cancer of Uterus and Ovary Removed by Abdominal Method.

DISCUSSION.

DR. THOMPSON in discussing the specimen of malignant tumor said that he recommended Halstead's operation in every case. Under the old operation, nearly every patient died from a return of the disease, but under the new operation forty to fifty per cent. are absolute cures. The most brilliant results follow early operation.

DR REYBURN said Dr. Thompson debated the real point at issue, which was whether any operation at all should have been performed in this case, this being a case of Adenoma. When any operation is performed upon the breast, the radical operation, namely the entire removal of the breast and axillary glands should be done. A great many of these operations are performed that are entirely unnecessary, being transient enlargements of the natural gland tissue, and entirely harmless.

DR. THOMPSON said that he recommended the removal of every tumor of the breast. He mentioned a case where he removed the left breast of a woman some eight years ago; she afterwards married a second time and had two or three children. After the birth of the last child a tumor appeared in the other breast, but with no return of the original disease. The same operation was performed. This goes to show what he believed the radical operation capable of.

DR. I. S. STONE said he had performed a number of these operations in the past year or two, some of them being for non-malignant fibroid tumors. This particular case was very extensive, and he called attention to it for that reason; there was much fat and glandular tissue, and it was evident that there was a tumor growing in the breast proper; it was movable and this influenced him not to open up the axilla. He thought that Dr. Reyburn meant to say that the axilla should not be opened in cases of small tumors. Quite a number of tumors will be found to be non-malignant, but Dr. Stone thinks it better to remove them for fear they will assume malignancy.

MEETING OF MAY 11, 1898.

The President, Dr. S .C. BUSEY, in the Chair.

The President presented two letters from Dr. L. B. Tuckerman of Ohio advocating the organization of a Committee on National Legislation which were read and ordered to be filed.

Dr. Acker offered the following resolution which was carried: Resolved: That this Society requests the Delegates from this District to the American Medical Association to cooperate with the Delegates from the Ohio State Medical Society to the American Medical Association to organize a Committee on National Legislation.

GANGRENE OF EYELIDS AND CHEEKS WITH DESTRUCTION OF THE EYEBALLS FROM THE BITE OF A MAN.

BY SWAN M. BURNETT, M. D.

Carrie Lee, colored, aged 24, was admitted to the Emergency Hospital from

Fairfax Co., Va., April 24, '98. Reported that a week before she had been set upon by her husband, in a state of insanity, during the night, and severely bitten and scratched about the face and on the body. When seen there was extensive gangrene of the lids of both eyes, these on the left side being the worst. There was also gangrene of the orbital tissues on that side reaching to the bony wall of the orbit on the lower outer portion. Cornea on both sides in a state of ulceration. Extensive destruction of the cheeks reaching from the smaller prominence on both sides to the outer angle of the eyes and including, on the left side, half the lower lid. There were other smaller gangrenous spots on the face and seventeen on the back and abdomen which however were almost healed when the patient was first seen. The eyes were covered with a mass of dead matter and foul smelling pus. All the gangrenous tissue was carefully dissected out and a dressing of iodioform gauze applied. Healing was prompt with no further suppuration and in 3 weeks she was discharged from the hospital with cicatrices shown in the the second photograph. Both eyes are of course atrophied and there is total blindness. An examination of the pus showed only ordinary staphylococci no streptococci or other malignant organism.

DISCUSSION.

Dr. DUFOUR said the case presented two important features. First : The muscles of a woman being usually well developed, it seemed strange how the man could have succeeded in injuring her with his teeth to this extent, and that the woman was not deprived of consciousness. Second : Whether there was any condition of dyscrasia in the woman, or whether the effects of the bite were due to the poison from the teeth?

Dr. BURNETT replied that the woman appeared to be perfectly healthy, which was made more apparent by the fact that the wounds promptly responded to proper treatment.

In reply to Dr. Foster whether the wounds on the trunk took on the same action as those on the face and head, Dr. Burnett said that they were not gangrenous to the extent of those on the face and head, which were by far the worst.

Dr. KOBER stated that it had been demonstrated by Surgeon-General Sternberg that the human saliva of some persons contains micro-organisms capable of producing septicaemia, which may account for the severity of this case.

EMPYEMA AND PURULENT PERICARDITIS.

By GEO. N. ACKER, M. D.

H. K., aged 3 years, male, white, was admitted to the Children's Hospital March 1, 1898.

The child was in the hospital about a year ago for rickets.

Present History.—He was taken ill four days ago, appeared dull and listless; on the first day vomited several times. Complained of headache, photophobia and lachrymaton. Had a dry, hacking cough with pains in the chest and difficult breathing; drowsy and very restless at night. There has been fever which was higher in the evening. Coated tongue, thirst, anorexia and constipation. The physician who sent him in stated that the child had pneumonia of the right lung.

Physical Examination of Chest. Heart normal; right lung, slight dullness anteriorly and marked dullness posteriorly. Very little air entering the upper and middle lobes and bronchial breathing over the lower lobe. There were many small and large räles throughout the

right lung. Left lung hyperresonant with broncho vesicular-respirations.

March 4. Takes nourishment well; stools frequent, but of good character; coughs a great deal and with much effort; is quite irritable; lies on the right side.

March 10. Dulness has increased over right lung anteriorly; bronchial breathing upper lobe, right lung, anteriorly and posteriorly; right axillary glands enlarged.

March 16. Bronchial breathing upper lobe right lung with dulness; broncho-vescular breathing with räles middle lobe. Ordered cantharidal blister.

March 18. The patient appeared to be much relieved by the blister. The cough is not so frequent, but of a violent character, attended with much disturbance. Skin moist and pale. Voids little urine.

March 25. The child appears about the same. Respires freely. Does not like to be disturbed; is drowsy. Has lost considerable flesh. Dulness more marked on right side anteriorly with bronchial breathing. Some dulness posteriorly with broncho-vescular breathing, lower lobe with räles. Broncho-vescular breathing with some räles left lung. The heart sounds weak. It is very difficult to examine the child.

March 30. No air in upper lobe of right lung. Breathing superficial and with more effort. Some recession of the lower inter costal space. Is fretful and easily disturbed. Voids more urine. Is weaker. Takes nourishment well and sleeps well.

April 3. Dulness increased on right side with faint bronchial breathing, upper part of lung and loud bronchial breathing, lower part with räles. Numerous räles left lung.

April 9. For some days has had abdominal distention with tenderness. Yesterday a bulging took place at the fifth and sixth intercostal spaces on the right side. Coughs hard at times. Repires freely. Is weaker and more fretful.

April 10. Died this morning.

The pulse during the attack ranged from 132 to 150, and the respiration from 36 to 50.

The temperature during the first week was 102° to 104°. For the next week, 100° to 101°. From March 14 to April 5, 100° to 102°. From April 5 to 9, 99° to 101°, except on the evening of April 6 when it reached 103°.

Necrospy.—Left lung anæmic. Right lung collapsed and compressed against the spine; costal and parietal pleurae thickened and in one place interadherent by rather firm bands; surface covered with greenish exudate; cavity filled with thick, greenish liquid containing pulpy masses of lymph coagula. No disease of ribs or vertebra. Pericardium distended with greenish pus; heart, pale; liver displaced downward, pale; cruvey surface of right lobe covered with recent lymph and adherent to diaphragm; some lymph on convex surface of spleen; spleen, pale; kidneys, pale.

Microscopic examination of contents of pleura showed diplococcus lanceolatus.

DISCUSSION.

Dr. Glazebrook asked if there had been any surgical interference in this case.

Dr. Lamb said that the changes found on post mortem would indicate an empyema of long standing. The pleura in this case showed marked thickening for so young a child, and too much thickening for a recent case; that it was evidently an old case—one to be measured by months.

A CASE OF HYDROPHOBIA.

By M. F. Thompson, M. D.

The following case was attended by Dr. W. W. Johnston and myself. Mr. S. age 21 was bitten by a small dog, May 22, 1897, lacerating his hand severely, making an ugly tear over the greater part of the dorsal surface; he called to see me the next day. The wounds were covered with pus, the sides of the wounds having an angry appearance ; cauterized with nitrate of silver, dressed it and patient resumed his vocation, the wound taking a good time to heal completely. No inconvenience or symptom felt until July 20, 1897. I was called to see him Tuesday July 22, 1897; nearly two months after the infliction, the patient informed me that he had been ailing forty-eight hours, thought he had caught cold and it had settled in his neck ; the father thought he was lazy ; July 21st, tried to go out with horses, as was his custom, but had to return in a short time owing to the pain in the muscles of his neck, and at intervals a little hard to get his breath. When I saw him July 22, at 5.30 a. m., he had been awake all night with pain in his neck from the chin to clavicle and at times he could hardly breathe ; he was very restless and inclined to rise in bed to get his breath, reclining again to talk to me. Knowing that he was bitten by a dog May 22, I promptly looked for symptoms of Hydrophobia.

I waved my hand over his face and immediately he said: "Doctor, don't do that again," gasping for breath, "it is like pouring a bucket of ice water over my body." Again I tried it with the same result, at once I made up my mind that it was a case of hydrophobia ; at this stage he could (with slight difficulty) take fluids and his medicine, yet one could see the mild paroxysm he was thrown into by so doing.

The following morning he was growing worse, spasms more pronounced, saying he was nearly perished for a drink of water ; he had tried all night to get the water which was on the table, about five feet away, and every time he moved toward it he would choke, he had to stop or "he would choke to death ; if you do not let me see the goblet of water and put it behind me it does not worry me but as soon as you bring it where I can see it the choking immediately comes on."

At this time the body became very sensitive to the air, the least draught of air or the breath of the one talking, or the movement of my body while getting things for him, would throw him into a paroxysm ; between the spasms he would hold me to keep me quiet to try to prevent the convulsion.

If anyone would open the door ever so little and gently, he would feel it and have an attack.

Up to 10 a. m. of the day he died he could talk without being affected ; but from this on he appeared to be impressed by his own breath, starting to say something he would go like a drowning man just before sinking, beginning a sentence and being cut off after uttering a few words, the spasm taking the place of the submersion.

He made sign for pencil and paper, writing rapidly, telling me to stay as he would die if I left him. The writing was at first legible, later it could not be deciphered. He would start to write a sentence and immediately be cut off by a spasm. At this stage the least stir of air would produce a spasm.

Dr. W. W. Johnston being in consultation tried to fan the patient but the least attempt at so doing made him nearly jump out of the bed. Thus the pneumatophobia was as marked as the hydrophobia.

The brother of the patient threw a light on the back of the patient and immediately the spasm commenced, showing that there was photophobia. Once during the morning he had a more severe spasm than usual, causing him to rush out of his room into the hall. Entering the hall I saw him and told him to return to his room, he said: "Doctor, I thought I was gone, I could not get my breath."

He would go from bed to corner and crouch there to prevent the vibrations of air on his body. If you talked to him while in close proximity he would push you away, telling you it hurt him to have you so near. I noticed particularly that the anterior cervical muscles were most contracted.

A thick, glairy, tenacious mucous ran from his mouth, the attempt at swallowing of which caused the spasm to begin, and in his attempt to get his breath a peculiar sound would be made resembling the bark of a dog; the sound was made by inspiration and not by expiration.

At 4 p. m. general convulsions started, lasting two minutes, getting more severe until 7 p. m., when the interval between them was prolonged. Death occurred at 7:45, during a prolonged convulsion.

Pulse from beginning of disease to 4 p. m. Wednesday varied from 90 to 100 per minute; from 4 p. m. to 7:45, 120 to 160.

Temperature, normal till 3 p. m. on day of death, gradually rising to 106 in axilla at 7:45, when he died.

The treatment was directed to the spinal irritation. Chloral, bromides, hydrobromate of hyoscine, 1-100 were freely given with little or no effect.

Autopsy (performed *after embalming*), revealed no special features, the meninges, particularly the pia mater, were congested to a degree, the spinal cord and medulla showed no special change. The medulla was used to inoculate rabbits at the Biological Laboratory of the Agricultural Department. The first three died within a few days from paralysis; these were injected the day after the autopsy. The three inoculated the twentieth day after the autopsy showed no evidence of being impressed by the virus.

DISCUSSION.

Dr. GLAZEBROOK performed the necropsy in this case, and mentioned that the undertakers had previously injected the body with embalming fluid (formalin and arsenic). He found the vessels of the pia mater especially injected, but did not notice any special injection of the vessels at the base of the brain. He said this was the third case that had come to his attention during the last ten years, seeing the other two cases about eight years ago. The symptoms in these cases were very marked, and exact pictures of the case reported by Dr. Thompson. There was absolute absence of any fear on the part of the patients from the time of bite to date of first manifestation of symptoms. They were both men in active life who took no notice of the slight traumatic injury and were not at all suspicious of anything when bitten. While at their work the men were suddenly taken with soreness in the neck, (resembling this case again in this particular). This occurred about the time of an epidemic of influenza, but in 24

hours the diagnosis of hydrophobia was made, chiefly from the pneumophobia, which increased as the disease progressed. There was also in these cases the secretion of viscid mucus from the mouth, and intense thirst associated with a horror of water on account of difficulty in swallowing. The duration of the disease was in one case about 60 hours and in the other 72 hours. They died chiefly from the convulsions which increased rapidly in number and severity. There was a marked increase in the temperature in these cases. The necropsy in the second case showed about the same condition as is found in cases of death from sunstroke.

Dr. BEHREND pointed out that the symptoms are not always the same; in his case reported sometime ago the dropping of water behind the back of the patient did not at all affect her.

Dr. KOBER said that he wished to correct the impression that the disease was confined to man and dogs, as it exists also among cattle, horses, swine, wolves, cats and goats.

Dr. J. FORD THOMPSON referred to the name being a misnomer, the muscles of deglutition being spasmodically excited by the sight of water, and that there was a dread of pain and not of water. His conviction is growing that the Pasteur treatment is not what is claimed for it, and referred to five or six cases receiving the treatment, the mortality being great. In a paper recently read and published it is stated positively that the mortality in France from hydrophobia has been increased since the Pasteur treatment was instituted. The percentage of cases of hydrophobia following bites of rabid dogs is smaller than usually thought to be.

Dr. BEHREND referred to Dr. Forwood's statistics showing that where six or seven persons were bitten by a rabid wolf, but one died. Dr. Behrend expressed the opinion that the poison must travel by metabolism, and that the external wound should be cauterized.

Dr. GLAZEBROOK did not approve of cauterizing the wound six or eight hours after the bite; he said that the poison either travels through the lymphatics or through the blood and not through the nervous system, and that the wound should be treated immediately either by drawing the blood or sucking the wound.

Dr. WARD referred to a case of a child eight and a half years old, bitten on right cheek by a dog; the child being taken with rabies 21 days after with feelings of malaise; there was no apparent dread of water at first, but it developed later; there was spasm in the throat and chest. The child was taken on Saturday and died the following Tuesday.

In concluding the discussion, Dr. M. F. THOMPSON said he regretted that the undertakers injected the body previous to the post mortem. The dog that bit the patient he referred to also bit another man who developed no symptoms of the disease. In all probability, absorption of the poison takes place through the lymphatic system.

MEETING OF MAY 18, 1898.

The President, Dr. S .C. BUSEY, in the Chair.

Dr. Busey offered the following letter sent to the Washington Academy of Sciences, which was adopted:

"The Medical Society of the District of Columbia in answer to the communication from the managers of the Washington Academy of Sciences, in regard to the courtesies through notices of meetings, respectfully replies that it will send cards of invitation to the public meetings of said Society to such members of the Academy as may desire to receive such invitations, and those members of the Medical Society, not members of the Academy, who may indicate such desire, will be pleased to receive cards of invitation from the Academy to its scientific meetings."

SARCOMA OF CERVICAL GLANDS; SECONDARY SARCOMA OF LUNG; WITH SPECIMEN.

By W. W. Johnston, M. D.

Miss B. Aet. 54; white: single: Virginia.

Family History.—Mother died of cancer. Sister died a few years ago with symptoms of asphyxia said to be due to large cervical tumors.

Previous History.—Always strong and well until present illness.

Present Illness.—Began about 16 months ago with gradual progressive enlargement of the cervical lymphatic glands. The patient came to Washington and consulted Dr. Marmion, about some defect of vision; she was advised by him to have an operation done to remove the tumors of the neck. She then consulted me, and I referred her to Dr. J. Ford Thompson. Dr. Thompson reluctantly consented to operate at the urgent request of the patient. The operation was performed at the Garfield Hospital on July 29, 1897, with a view to relieving pressure symptoms.

Condition Before Operation.—Anæmic; not reduced in flesh, weighed as much as when in perfect health; suffering from dyspnoea. Great lateral irregular enlargement of the cervical region on both sides, greater on the right, the enlargement extending from the jaw nearly to clavicle on this side. There were four or five rounded tumors, the largest the size of a walnut, at various points on the back of the neck.

Operation.—Dr. Thompson removed, on the right side, part of a large growth from under the jaw and in the cervical region, but in consequence of extension downward between the muscles of the neck, he was unable to proceed further.

The patient was discharged from the hospital Aug. 4, 1897, improved. From then until the time of her death the tumors decreased in size. Her weight from the first of July until September, 1897, remained the same. During the autumn she remained in the country, returning to Washington in the winter with the desire to have the operation repeated, as the tumors continued, although she asserted the growth was lessening in size.

April, 1898, she sent for me, requesting relief from dyspnoea, dysphagia, insomnia and nervousness. She said the tumors had continued to diminish in size, and that some had almost entirely disappeared; that her axillary glands had been as large as eggs, but were now not so large as hazel nuts. She had lost in weight.

Condition April 20.—Weighed about 160 pounds. Body fairly well nourished and rounded. Cervical tumors considerably enlarged, axillary glands slightly enlarged; no other glands involved. The symptoms were cough, mucus expectoration, dyspnoea, orthopnoea; difficult deglutition; the appetite and digestion were good; the heart was weak, pulse 114; there was great nervousness, with hysterical attacks, tremor of hands and fingers, and constant itching of the skin. There were scratch marks and scales over the whole body.

Lungs.—Flatness on percussion, and bronchial breathing over upper lobe of left lung anteriorly. The vocal fremitus was diminished over the area of flatness. Coarse moist râles heard over the whole chest. Loud transmitted tracheal rale heard over both lungs, anteriorly and posteriorly.

Heart.—Weak; sounds normal.

To be continued.

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THE
NATIONAL MEDICAL REVIEW.

VOL. VIII. WASHINGTON, D. C., DECEMBER, 1898. No. 7.

Original Articles.

THE QUESTION OF DIET IN HYPERACIDITY.

DR. FRANZ A. R. JUNG,
Washington, D. C.

The following lines are destined to treat this problem not from the standpoint of the investigating scientist but from that of the general practitioner.

1. The symptoms of acidity, which are caused by motoric insufficiency are frequently mistaken for those of an uncomplicated Hyperaciditas hydrochlorica. Upon chemical examination, such an acidity is often found to be a subacidity in regard to HCl, the high figure of the total acidity being caused by other factors than HCl. Fleiner has shown that the symptoms of patients with an excess of organic acids have altogether a milder character. Contrary to the HCl symptoms they never produce real attacks of pain, they usually begin hours after meals, and they rarely appear during the night. The common cause of this acidity is a diminished motoric action of the stomach in its different forms. To give a pure meat diet to such a patient would surely be nonsense, since the motoric insufficiency has to be chiefly considered.

2. The second mistake, which I frequently have the opportunity of observing is due to the inaccurately explained symptoms on the part of the patient. The same article of diet is sometimes well borne and at other times causes distress. Shortly after meals a very noisy belching begins, which seems to be uncontrollable. The patient does not know how to get rid of the uneasy feeling in the stomach nor does he know what to eat. If the diagnosis is made: "Beginning catarrh of the stomach," a soup diet is ordered accordingly and at the next visit the symptoms only seem to be worse. Possibly distinct complaints of pain, acid taste and of burning sensations are made. In such a difficulty we are frequently induced to give still more careful advice in regard to the diet and only prescribe milk toast, Horlicks malted milk, etc. The reason for this is our general idea, that every dyspepsia might have something to do with catarrh of the stomach. The exaggerated belching of such cases is more or less an eructatio nervosa, which belching, the patient is nearly unable to produce in the lying position.

Upon analysis the gastric juice shows an increased amount of free HCl. As soon as a rational meat diet is instituted

the patient instantly gains in weight, and the pain disappears, whereas he was losing while observing the careful diet above mentioned.

3. The third kind of hyperacidity is connected with hypersecretion. In such cases large masses of gastric juice are frequently ejected. Sometimes without any food remainders neither gastrosuccorrhoea chronica nor periodica is always connected with hyperacidity, but is so in a good many cases.

When the dispute began, whether hyperacidity ought to be treated with albuminous or starchy food, gastrosuccorrhoea was at first included but nearly all authors now agree beyond any doubt, that an albuminous diet is the only one in hypersecretio acida.

Starchy food, in coming in contact with the strongly acid liquid in the stomach, finds its converting process stopped immediately.

I have seen a number of cases, who for 12 years or more had observed a pure vegetarian diet or different other régimes even a diet a la Battle Creek or a pure milk diet. None of these régimes gave any constant benefit. These patients finally saw themselves compelled to avoid every particle of starchy food on account of the pain or vomiting spells caused thereby. Such cases are able to diminish considerably the number of their attacks and the amount of gastric juice by observing a meat diet.

4. The last variety of hyperacidity is the hyperacidity Katexogen. In the case of hyperacidity nervosa the symptoms might be caused by an increased sensitiveness to a normal gastric juice; but real hyperacidity shows values of 80-120 total acidity with 50-100 free H Cl. after a Boas test meal. In these cases the question is still unsettled whether a meat diet is the only right one. Experiments have partly shown that a vegetable diet works less stimulating in the production of HCl.; other examinations have proved almost the opposite, namely that albumen and starch act nearly alike. Generally the different kinds of diet have worked in such a way that repeatedly after an albuminous régime an increased production of HCl. has been observed. But this increase has not been so very pronounced as we could theoretically expect. On the other hand there is no doubt that an albuminous diet works splendidly as far as the symptoms are concerned.

Hemmeter's experiment of feeding two dogs differently, namely the one with meat and the other with carbohydrates shows a much more pronounced difference in quantity of HCl than is observed in the human stomach, because the dog is distinctly a carnivorous animal, whereas the human being is omnivorous.

In von Leyden's Handbuch der Ernährungstherapie, recently published, Riegel after a careful study of all experiments comes to the conclusion that: free HCl appears relatively early after feeding on carbohydrates, while the total value of HCl. is a little less than in a mixed or a pure meat diet. With an amylaceous diet the amount of HCl. was relatively higher. Riegel therefore finds no reason why the albuminous diet should be abandoned.

Fleiner, while objecting to pure albuminous diet yet does not recommend a pure carbohydrate diet but rather advocates a milder mixed régime consisting of milk, eggs, white meat, light flour, which may even be rich in gluten. This diet, on account of the minute division

of its particles, leaves the stomach very readily. Corresponding with this I have frequently observed that, when by the administration of strychnia the motoric action of the stomach was increased, the patients with hyperacidity became completely free from pain, even when by the use of an albuminous diet the amount of HCl was increased. It is not probable that the albuminous diet will be abandoned, but more stress has to be laid upon a milder, less irritating form of administering it.

MORPHINISM.

By E. O. Crossman, M. D.,
Member American Medical Association,
Medical Director of Markleton (Pa.)
Sanitorium.

Morphinism is an irresistible craving for morphine, with a gradual increase of the doses to meet the demands of the system. The habit is usually acquired by the adminstration of the drug by physicians for some painful malady. Heredity influences the formation of the habit. Neurotic persons are apt to become its victims and it is of this class that I desire to speak, especially at this time. A nervous system that is susceptible to the formation of the morphia habit would also fall an easy victim to the habitual use of cocaine, alcohol, chloral, or chloroform by inhalation. Not infrequently do this class of patients take more than one of the above narcotics at the same time. Frequently he alternates from one to the other under the delusion that he can thus overcome the previous habit and free himself from the habitual use of the drugs. Time and space will not permit me to speak in detail of the symptoms, diagnosis and routine treatment of morphinism. I wish to speak briefly of the special neurasthenic cases that come under the observation of every general practitioner and who are nearly always unsuccessful in bringing about a recovery in consequence of the very delicate state of the nervous system of the patient.

The various methods at our disposal for treating morphinism are :

1st. Burkardt slow deprivation : this is the oldest method and most unsatisfactory of all. The period of suffering by this method is prolonged and nearly all cases either relapse openly or succumb to the temptation of taking the drug secretly. This method I have entirely discarded.

2nd. The Levinstine method seems to have met with favor with some members of the profession though we certainly are not warranted in the promiscuous recommendation of this plan of treatment as the immediate withdrawal, in my experience, always causes maniacal delirium, it is apt to cause collapse, paralysis of the heart and should not be recommended except in selected cases.

At best it produces a great shock to to the nervous system. But for the danger to the patient this method though not humane, would be satisfactory as it helps the patient in the quickest possible way over the difficulty.

3rd. Erlenmeyer method the most rational though not always practicable for the class of cases under consideration who are anemic, dyspeptic, neurasthenic, as this method relieves the patient of the customary dose in from 3 to 8 days. It is not safe in this particular class of cases to entirely withdraw the drug in so short a time.

The method that has proven most sat-

isfactory in my hands in the sanitarium is something as follows: First strict supervision and absolute control of the patient. The rapid reduction at first of one half the dose each day until 1 gr. or less is taken in 24 hours at the end of a week or ten days. From the small dose make a little reduction each day until the patient is entirely free from the drug, this can usually be accomplished in from 2 to 3 weeks. The treatment must be subject to variation according to the patient's condition from hour to hour. Following the time of complete withdrawal by doses of codein in sufficient quantity to control pain. Bromide of caffeine in 2 gr. doses during the early part of the day for nervousness and depression together with mild Turkish baths, electric baths and salt baths according to the patient's condition. At night sulfonal, trional or bromide of ammonia may be used to produce sleep. These patients do best under the complete or modified rest treatment.

With this method many cases that have not been successfully treated by the routine methods have been restored to complete health. These cases should remain under treatment from six months to one year. Too much time and attention cannot be given patients at this critical period. His environments should be pleasant, his life regular with much exercise. His diet supervised with care, and strict attention given to his moral and religious nature.

How can we prevent relapse? This passion is not unlike others and the patient must if possible be kept away from temptation, amid healthy surroundings and the longer this can be accomplished the greater will be the guarantee against a relapse.

Zabaco said, with reference to preventive treatment, "I do not advise physicians no longer to make morphine injections, nor even to lessen the number of prescriptions of morphine, this would be to deprive ourselves of one of our best remedial agents in certain cases. But I believe there would be far less morphio-maniacs if on one hand physicians would always insist on themselves making hypodermic injections of morphine for their patients, never intrusting their syringe and morphine to anybody, and if on the other hand pharmacists would never fill a prescription for morphine except the exact number of times indicated on the blank, and once only when there is nothing stated to the contrary. I am convinced that this very simple rule would virtually put an end to morphinism without depriving us of a precious remedy which is discredited, indeed though unjustly, by reason of the abuse that has been made of it."

Correspondence.

South Boston, Mass.
Nov. 26, 1898.

Editor National Medical Review,

Dear Sir: Apropos of the many criticisms of the management of the medical department in the Spanish-American War, as one who has served in Southern camps for five months, I would suggest that the best way to approach perfection in military medicine and surgery would be to establish a chair on these branches in every reputable college in this country. The different branches of these subjects, including

hygiene, transportation of the injured, the management and organization of field hospitals, red tape of the service, etc., could be taught in a course of lectures extending over one year. Even though the knowledge thus gained was never used, it would be no burden to carry and would prove useful in civil practice. The knowledge of army red tape would give the student an insight into methods which would be of some benefit to him in conducting his ordinary business affairs. When the tocsin of war sounded again it should find the medical profession, as a body, ready to tender its best assistance, without the preliminary training which is now required in order to do effective work. In the late war our profession as a whole did noble and conscientious work, and whatever may have been lacking in its effectiveness was not due to ignorance or incapacity as far as ordinary professional duties were concerned, but to inexperience in military medicine. It has been suggested that the government establish a medical school to train physicians for the army. This is unnecessary as the course now given to regular army surgeons in Washington before they enter their career, is sufficient. In any great emergencies such as the civil war and the one we have just passed through, volunteer surgeons must be depended upon for their share. They cannot devote the time to take a course at some special school and the method I advocate would be in conjunction with the regular medical training. The advantages of this system are obvious. The country would then have a large body of doctors, fitted for the medical department of the army and ready to serve at short notice.

Yours respectfully,

WILLIAM H. DEVINÉ,

Late Major and Acting Chief Surgeon, 2nd Div. 2nd Army Corps.

WASHINGTON, D. C.,
November 19, 1898.

Editor National Med. Review,

DEAR SIR:—At a recent meeting of the Joint Committee of Scientific Societies of this city, on Vivisection, the following resolution was adopted; "Resolved that the Secretary be authorized to call the attention of the prominent medical and scientific journals of the country to the importance of the meeting of the American Humane Society to be held in this city in December proximo, and to request that editorial notice be taken of the danger that the influence likely to be exerted at this meeting may cause the vivisection bill now pending in the Senate to be called up and passed." I was also directed to ask that you will advise your readers to write to such Senators and Representatives as they may know, in regard to the matter.

Yours truly,

D. S. LAMB, M. D.,
Secretary.

THE NATIONAL MEDICAL REVIEW,

EDITED BY

GEORGE W. JOHNSTON, M. D., THOMAS E. MCARDLE, M. D.,

WITH THE CO-OPERATION OF

Andrew Stewart, Ph. D., E. A. de Schweinitz, Ph.D., M. D.,
Edwin B. Behrend, M. D.,

AND

THE MILITARY SURGEON,

A SUPPLEMENT,

UNDER THE CHARGE OF

Colonel WILLIAM H. FORWOOD, Assistant Surgeon-General U. S. Army.

OFFICE: 1408 Twenty-first Street, N. W.

WASHINGTON, D. C., DECEMBER, 1898.

Notices and Reviews.

A TEXT BOOK OF OBSTETRICS. By Barton Cooke Hirst, M. D. Price, Cloth, $5.00; Sheep or Half Morocco, $6.00 net. Philadelphia. W. B. Saunders. 1898.

Devotion for twelve years to the exclusive study of obstetrics and gynecic surgery together with a facile pen and an apt method of illustration should render our author capable of producing an effective work. A careful study of the seven parts into which the volume is divided will convince an impartial observer that Dr. Hirst has given us an American text-book which will prove especially valuable to students and at the same time serve to help the memory or aid the judgment of the physician in active practice. The first, and by its nature the longest part, considers the subject of pregnancy; the second is devoted to the physiology and management of labor and of the puerperium; the third instructs in the mechanism of labor; the fourth and fifth review the pathology of labor and of the puerperium, the sixth treats of obstetric operations and part seventh closes the volume with the very latest views on the treatment of the new-born infant. Illustrations have been extensively employed, the majority of them from original photographs and drawings.

A TEXT BOOK OF MATERIA MEDICA. By George Frank Butler, M. D. Price, Cloth $4.00; Sheep or Half Morocco, $5.00 net. Philadelphia. W. B. Saunders. 1898.

In taking notice of this notable work we must congratulate the author and agree with him that it must be peculiarly gratifying to be called upon so soon to revise his book on materia medica, therapeutics, and pharmacology for the second edition, since it is an evidence of the very favorable reception and appreciation of the work by medical teachers, students, and physicians generally. We think Dr. Butler is just in his claim that the advances in pharmacology in the past two years have been rather in the direction of clearing from obscurity the action of old remedies than in marvelous new discoveries. He considers that the most important additions made to the knowledge of the physiological action of drugs relate principally to antipyretics, antiseptics, acouite, and strychnine. One of the most important innovations is the substitution of a chapter on the untoward effects of drugs for that or definitions. Serum-therapy and the therapeutics of nuclein are fully discussed in the present edition. The author earnestly requests any one who may discover an error of whatsoever nature in this issue to promptly report the same to him.

A TEXT BOOK OF PATHOLOGY. By Alfred Stengel, M. D. Price, Cloth, $4.00; Half Morocco, $5.00 net. Philadelphia. W. B. Saunders. 1898.

This is eminently a practical work and will be found of immense value not only to the present student but also to the physician in active practice whose facilities for the study of pathology in his student days were not so ample as at this era. Prominence is given to pathologic physiology and discursiveness and citation of authorities are avoided. Except in a few instances the author leaves to special works or technique the discussion of methods of examination. In certain parts of the sections on general bacterteriology and on neuropathology we find a discussion of conflicting theories, in the other parts of the work controversal matter has been avolded. We commend the work as a competent and practical aid to the student and physician.

THE AMERICAN POCKET MEDICAL DICTIONARY. By W. A. Newman Dorland, M. D. Price, $1.25 net. Philadelphia. W. B. Saunders. 1898.

This little book contains pronunciation and definition of over 26,000 of the terms used in medicine and the kindred sciences, along with over 60 extensive tables. It cannot, of course, take the place of the large dictionaries which are so indispensable to a thorough understanding of the language of medicine. Of necessity the definitions of terms are brief, but they are clear, adequate, and to the point. The author has developed the possibilities of a pocket lexicon to a very creditable degree.

AN INTRODUCTION TO PATHOLOGY AND MORBID ANATOMY. By T. Henry Green, M. D. Lea Bros. & Co. Philadelphia. 1898.

Dr. H. Montague Murray, the successor of Dr. Green in the lectureship on pathology at Charing Cross Hospital, revised and enlarged the latter's original work for the eighth English edition in 1895. The work before us is the eighth American edition and was prepared from the latest English edition. Many new illustrations have been substituted for less satisfactory ones in the last edition. The arrangement of the text has been altered and several new sections have been introduced to take the place of matter of less practical value. Dr. Walton Martin who has so thoroughly revised the present thought that a change in the sequence of the text was necessary in order to give consideration to, first, general pathological laws, and then the application of these laws to special tissues and organs. For example, an arrangement in which tuberculosis of the lungs is considered under the heading of infective granulomata, and pulmonary phthisis under the inflammation of the lungs, seemed to him, as it does to us, disadvantageous. In changing the order it was necessary to introduce a few new brief paragraphs. Several discussions have been omitted and in their place a short chapter on some of the animal parasites have been inserted. The terms —fatty metamorphosis, lardaceous degeneration, and mechanical hyperæmia have been replaced by fatty degeneration, amyloid degeneration, and passive hyperæmia.

A TEXT BOOK OF PATHOLOGY. By Alfred Stengel, M. D. Cloth, $4.00 net; Half Morocco, $5.00 net. W. B. Saunders. Philadelphia. 1898.

For the writing of this book the author deserves great praise. The plan adopted by him is an excellent one. Except in a few instances, discussion of methods of examination has been omitted. Discussion of the pathology of the skin and of the organs of spinal sense is very wisely excluded. Throughout the work the subject of pathology is presented in as practical a form as possible and always from the point of view of the clinical pathologist.

THE MEDICAL NEWS VISITING LIST FOR 1899. Philadelphia. Lea Bros. & Co. Price $1.25.

There are many doctors in this country who would not be without this handy little volume even if it cost twice its present price. We have been familiar with it for many years and we can assure our readers that its value for the coming year has been lessened in no degree.

Progress of Medicine.

GENERAL MEDICINE AND SURGERY.

UNDER THE CHARGE OF

EDWIN B. BEHREND, M. D.

The Value of Analyses of Stomach Contents.

The author dwells upon the great advances made in the study of the chemical relations in diseases of the stomach, and comes to the conclusion that the value of chemical analyses has been greatly lessened by the investigations of the past few years The digestive work performed by the stomach is very slight. It peptonizes but a small quantity of albumina, its chief function being to dissolve and break up nitrogenous material, the intestines eventually preparing the food for absorption. If the motor function of the stomach fails, the latter immediately becomes the seat of fermentations which intoxicate the individual and his general health suffers. If there is simple secretory insufficiency, the duodenum will take the place of gastric digestion, provided that the motor function remains intact. In short one can abstract the peptic work done by the stomach and need only see in that organ a reservoir of alimentary materials. Finally there are two conditions essential to its physiology :

1. A regular evacuation ; 2. A sufficient quantity of free hyrochloric acid to render the contents less free to ferment. It is sufficient to state that the study of stomach chemism has a very slight importance in the consideration of the general state of nutrition. It is impossible to know from an examination of stomach contents whether an individual digests his food properly or not ; the indications furnished by the general state of health or the determination of urea excretion are much more precise. Where the value of the stomach analysis is incontestable is in the study of secretory anomalies, Reichman's disease, hyperchlorhydria, simple ulcer, or cancer ; but it is well to understand that there are no pathognomonic signs of affections of the stomach. In all cases one should not be content with the results derived from the stomach tube alone. Chaix (A.) Quelle est la valeur clinique du chemisme. Marseilles Thesis, 1898.

The Use of Hot Sand in Therapeutics.

The sand employed is either fine sea or river sand. The temperature at the beginning of the sand bath should be 35° R. ; later it should be raised to 45° and 55° R. In private practice the bath is best given in a wooden box. The patient should be placed naked or wrapped in a linen cloth into the heated sand and should be covered from his neck to his feet with it. Over this box is placed a woolen blanket to prevent rapid radiation of the heat. The bath should last from 1-2 to 1 hour. The advantage of the full bath is that relatively high degrees of temperature can be applied directly to the skin itself without overheating the entire body. The chief indications for the employment of these baths are : To diminish dropsical conditions whether dependent on heart, liver or kidneys ; in the absorption of pleural exudates ; in the treatment of chronic arthritic troubles, especially arthritis chronica deformans, in which the severe pains are greatly lessened, frequently the exudates are so far removed that the mobility of the joints may be greatly increased. The local application of the hot sand bath is especially indicated in these cases. Excellent results have been attained in sciatica as well as in acute and chronic articular rheumatism. Grawitz (E.) Ueber die Verwendung des heissen Sandes zu therapeutischen Zwecken. Zeitschr. f. diätet. u. physik. Therapie, Bd i, 1 Heft.

An Unusual Case of Poisoning by Potassium Chlorate.

A woman tried to commit suicide by taking 35 grams of potas. chlorate. The clinical picture was entirely different from the usual one. Leucocytosis was slight. The changes in the red blood corpuscles was but slight and poikilocytosis was only observed on the first two days. The number of red corpuscles never sank below 3 million. There was no anuria. The quantity of urine passed ranged between 400 and 750 cc. Vomiting and purging ceased, and after the third day the patient presented no symptoms which would lead one to expect a lethal ending. On the 6th. day uraemic symptoms set in; severe epileptoid attacks occurred which lasted until the death of patient on the 10th. day. The autopsy showed methaemoglobin staining of the various tissues and organs. No icterus. Jakob. Ein merkwürdigen Fall von Kalichloricum Vergiftung. Berl. klin. Wchnschr., 1898, no. 23.

Intermittent Pupil--Reaction in Tabes.

In two cases out of 103, changes in the nature of the pupil reaction were observed. One woman who presented all the symptoms of tabes for four months without any defect in the eyes, Argyll-Robertson, pupil appeared then suddenly after this time. The other case presented analogous features. For a time complete reflex iridoplegia, then a return to the normal condition. This intermittence was observed for some time. These cases show that the reflex iridoplegia may not only change in the course of tabes, but that this change can continue even after long persistence and even increase of the symptoms. Eichhorst. Einige Bermerkungen über intermittiderende Pupillen Starre bei Taber Dorsalis. Deutsch. med. Wchnschr., 1898, no. 23.

Bacteriological Examinations in Whooping Cough.

In 25 successive cases Zusch found constantly in the mucus particles coughed up, a bacillus which was identical with that described by Czaplewsky as the cause of the disease. Cultures grew best on anasarca fluid. Whooping cough could not be transmitted by intratracheal inoculations. Of the above 25 cases, six were observed constantly, and showed a close relationship between the clinical course and bacteriological findings. The clearer the clinical picture, the more bacilli were found. With complicating bronchitis the bacilli became less numerous and cocci appeared more frequently. Of special interest were two cases in which the bacilli were found before the clinical diagnosis was made. Bacteriologische Untersuchungen bei Keuchhusten. Zusch. Münch. med. Wochenschr., 1898, Nov. 23.

Laryngitis Nodosa.

The author describes an acute, non-oedematous infiltration of the various parts of the larynx; especially of the region about the arytenoid cartilages, which causes hoarseness and pain and is rheumatic in its nature. This affection is to be regarded as of the same nature as erythema nodosum of the skin. Infiltrations of like appearance were noted on the velum palati, septum of nose, the conjunctiva and drum membrane. The therapy consists in the internal administration of salicylates. The two cases reported recovered completely. Uchermann, (C.) Laryngitis acuta rheumatica circumscripta (nodosa). Deutsch. med. Wchnschr., 1897, no. 47.

A Form of Parasite not Previously Observed in Suppurative Exudates of the Pleura.

Exploratory puncture of a pleural effusion of eight days standing showed the presence of an exudate in which a number of thin thread like parasites were found, some of which showed a spindle shaped thickening at one extremity. They resembled somewhat the cercomonasin testinalis. The patient, after a violent fit of coughing, expectorated a large quantity of pus, after which no fluid could be detected in the pleural cavity. Culture experiments with the pus showed the presence of staphylococci. It is probable that the parasite was only a secondary infection. Walcke, (E.) Münch. med. Wchnschr., 1898, xlv, no. 34.

CLINICAL DIAGNOSIS.

UNDER THE CHARGE OF

ANDREW STEWART, A. M., PH. D.

A Simple Method of Estimating the Quantity of Urea.

Dr. Buckner suggests an easy method by which the proteid metabolism can be calculated with some degree of probability by comparatively simple operations. If it be granted that, as Buckner holds from many check experiments, when the salts in the urine are about normal in amount, especially the chlorides, the urea forms one-half of the total solids, unless some abnormal constituent is present in excess, the specific gravity will give the approximate percentage of solids. A qualitative test for chlorides with nitrate of silver will show whether they are increased or not, or if present in a small amount, and from this the total amount of salts may be reckoned in proportion. As an example, a normal urine, 1,000 cc. in the twenty-four hours, had a specific gravity of 1.0285; total solids (28.5x2.33) =6.64 per cent; chlorides, precipitate normal; no abnormal constituents. The urea, therefore, was estimated at 3 32 gm. per cent. Liebig's method showed 3.41 gm. per cent.; Kjeldahl's process, 1.81 gm. of nitrogen, or equal to 3.89 gm. of urea per cent., which will give a figure very similar to the others if the nitrogen of the uric acid and other nitrogenous constituents be subtracted. In a case of diabetes passing 2,250 cc. urine per diem, with a specific gravity of 1.038 and containing 4. 8 per cent. of sugar, the total solids will be 199.1 gm. in the whole day's urine (38 x 2.33) x 2.25, the sugar, 108 gm. On subtracting the figure for the sugar from the total, 91.1 gm. remains, the half of which, 45.55 gm., corresponds to the amount of urea excreted. As 1 gm. of urea represents 2.9 gm. of albumin, or 13.7 gm. of flesh, the excess lost by the diabetic over the normal man amounts here to 170 gm. of flesh. The method appears to afford a means whereby a sufficiently accurate determination of proteid metabolism may be worked out from very simple every-day clinical manœuvres. Of course, allowance has to be made for the nature of the diet. Rev'd. in Med. Rec., N. Y., 1898, 54, 589.

A Rapid, Accurate Determination of Sugar.

Lehmann's method (Sitzungsbericht d. phys.-med. Gesellschaft zu Würzburg, 11ten. März, 1897, p. 35) is as follows: A definite quantity (say 60 cc) of Fehling's solution (e. g., containing a definite amount of copper) is boiled briefly and then mixed with a known quantity of urine, the boiling being repeated. The mixture is then filtered through as small a filter as possible (Schleicher and Schüll, No. 590). Potassium iodide is added to a definite quanity of the filtrate (50 cc), after dilution (to 250 cc) and acidulation to acid reaction with sulphuric acid. The liberated iodine, corresponding to the residual copper in solution, is determined titrimetrically with 1-10 normal sodium thiosulphate solution. The amount of copper thus estimated multiplied by 5, subtracted from the original total copper of the Fehling's sol. gives that which corresponds to the sugar of the urine. Benjamin has subjected this method to rigid testing and found it accurate. About four determinations can be made in half an hour. Benjamin, (R.) Ueber. d. klin. Verwendbarkeit d. Lehmann's-chen jodometrischen Zuckerbestimmung. Deutsche med. Wochnschr., 1898, xxiv, 551.

Protozoa in Leucemic Blood.

(See abstract Nat. Med. Rev,. 1897-98, vii, 21) A sporozoon has been discovered by the writer in all of 16 cases which he had under observation. Eleven were cases of so-called mixed leucemia, in which the parasites were located within

the white cells or crowded up close against them. They were also observed free in the surrounding serum. The organs representing the source of the blood were particularly infested with these parasites. No cultures have been yet successful. Loewit (M.) Weitere Mittheilung ueber Sporozoenmachweis bei Leukaemie . Wien . klin. Wochenschr., 1898, xi, 479.

Precipitation of Granules from the Blood.

They are pale and more or less spherical, 1-6 to 1-3 the size of red blood corpuscles. Place a small drop of blood on a microscopic slide in the usual way, mix with an equal quantity of 10 per cent sod. carb. and a like quantity of 20 per cent ammon. chloride. Cover with a slip and let stand for 30 mins. The granules increase in number the longer the slide stands ; therefore make all comparative examinations at a fixed time after mixing. Use a 1-8 objective ; and observations should be made at about the centre of the slip. Count the granules in the field and all the red blood cells and divide the former into the latter. The relations of granules to red cells are : I Physiological conditions—1 : 10 in the morning ; 1 :20 in the evening. More, however, in children then in adults.

II Pathological conditions—1 :1 to 1 :5 in Bright's disease and gout ; 1 : 3 to 1 : 40 in fever. The number of granules varies with the uric acid passed in the urine. Haig, Alex. A demonstration of the granules precipitated in the blood by chloride of ammonium. Brit. Med. J., 1898, ii, 640.

Staining the Diphtheria Bacillus.

I One gram methylene blue (Grübler) dissolved in 20 cc 96 per cent alcohol and mixed with 9500 cc dist. water and 50 cc glacial acetic acid.

II Two grams of benzoin dissolved in 1000 cc boiling dist. water and filtered.

Cover glass preparations from fresh serum cultures are stained in I for 1 to 3 seconds ; rinsed in water and counter stained in II for 3 to 5 seconds ; washed, dried and mounted in balsam. The bacillus appears as a slender, longish rod, stained brown and generally containing granules of deep blue or inky tint —usually two at the poles and occasionally a third at the middle of the rod. The pseudo- diphtheria bacillus shows no granulation. The method is not very successful with throat membrane or swabbings. Neisser, Zeitscheift., f. Hyg., 1897, xxiv, 443.

Fatal Hæmatoporphyrinuria.

A case is reported where fatal hæmatoporphyrinuria resulted from the protracted adminstration of sulphonal. The symptoms were : profound gastric and nervous disturbance, muscular twitching and progressive paralysis. The urine was albuminous and became, at first, claret color, changing later to normal. It contained hæmatoporphyrin. Shrivelled red blood cells were also seen, and, toward the last, granular casts. An examination of the blood showed a light grade of anemia, with little change of cell structure. Temperature was irregular, ranging from normal to 101°. The autopsy revealed a fatty degeneration of the liver, while the kidneys were of the interstitial nephritic type. The lesson that the case teaches is to beware of administering sulphonal where there is a suspicion of kidney disease. Hotchkins, R. D. A case of hæmatoporphyrinuria. Brit. Med. J., 1898, ii, 685.

Gonococcus Stain.

Saturated solution of thionin and fuchsin (in 2 per cent carbolic acid water) are employed, in the proportion of 4 : 1. The separate solutions keep indefinitely, but must not be mixed except just before use. It is only necessary to pour a few drops of the solutions (in the above proportion) into a watch glass, for use ; and the staining occupies but 1-4 to 1-2 minute. Wash and mount, as usual. The cocci take up the thionin appearing a distinct, clear blue against the intense (fuchsin) red of the cell protoplasm. The nuclei present a combination of these colors. Red blood cells are the color of sealing wax ; and all other micro-organisms are blue. Lanz A. Ueber die

Färbung des Trippersecretes mit Anilin farbengemischen. Deutsch. med. Wochenschr., 1898, xxiv, 637.

A Pertussis Bacillus.

A small, immobile, coccus-like bacillus, which causes first a turbidity and then a sediment in bouillon; has little vitality and does not thrive on gelatin, or below 24°C. It grows well, however, in milk. Morphologically it resembles the influenza bacillus. Whether this germ is the ultimate cause of whooping cough, is still in question; but, as it was found in each of 18 cases under observation, it is fair to believe its connection with the disease is intimate. Vincenzi, L. Zur Etiologie der Tussis convulsiva. Deutsch med. Wochnschr., 1898, xxiv, 631.

A New Centrifuge Tube.

This is a glass tube narrowed at one end as is the ordinary instrument: at the other end it is just slightly constricted to permit of being closed by the pressure of a finger. In the narrow (distal) end is fitted a little rubber stopper. The sediment is obtained, after centrifuging (and closing the large end as above said) by removing the rubber stopper and touching a glass slide with the small end. Fuld, J. E. A new centrifuge tube. Med. Record, N. Y., 1898, 54, 755.

Detection of Pyramidon in the Urine.

The characteristic reactions of pyramidon (dimethylamidophenyl-dimethylpyrazolon) in aqueous solution, prepared, and recommended as a substitute for antipyrin, by Filehne and Spiro (Berl. klin Wochnschr., 1896, No. 48) are: transitory violet blue coloration with ferric chloride; the same with sodium nitrite and sulphuric acid; with alcoholic bromine or iodine, transitory blue color; with hydrogen peroxide, after warming, blue color. These reactions depend principally on the dimethylamido group, which, as is well known, is frequently sensitive to oxidizing agents. The urine in which the pyramidon was encountered (the patient having taken pyramidon for some days previously) was of a peculiar red color, which scarcely changed on standing. It gave no pronounced spectrum bands. Salicylic acid, salol, antipyrin and tolipyrin were proved absent. As a control the author, himself, took 0.2 grams of pyramidon per diem, and employed his urine for experimenting material. The reactions were, in general, not so marked and characteristic as in the aqueous solutions of the compound; but if a very weak alcoholic solution of iodine (10 per cent, diluted with nine parts of water) be floated on a column of the urine, a sharp violet ring, which, after standing, changes to red-brown, will be observed at the point of contact. This reaction is characteristic and is, therefore, recommended for the detection of pyramidon in urine.

Jolles, A. Uber den Nachweis des Pyramidons (Dimethylamidoantipyrins) im Harn. Zeitschr. f. anal. Chem., Wiesbaden, 1898, xxxvii, 441.

Dangers resulting from Diphtheria Bacilli in the Urine.

It was observed that a guinea pig, that had been injected with broth culture of diptheria bacilli, voided hemorrhagic urine. The pig was killed, urine was obtained under antiseptic conditions from its bladder, and flowed over coagulated serum in a Petrie dish, when, after incubation, a plentiful growth of Klebs-Lœffler bacilli appeared. A second pig was then injected, and killed five hours later. The urine, obtained as before, was of normal appearance but was found to contain the bacilli. The result in the case of the second pig is somewhat surprising, considering the short time that elapsed between injection and death. These facts prove that the bacilli in the blood current, of guinea pigs at least, are eliminated alive in the urine. It suggests that, at least in hemorrhagic diphtheria, bacilli will be found in the urine, and it may be predicted, that, to prove the presence of the bacilli in the blood current, search will in future be made for them in the urine. The urine and fæces of patients (the latter are nearly always mixed with urine) will have to be disinfected just as rigorously as in cases of enteric fever. Smith, Fred'k. Diphtheria bacilli in the urine. Lancet, Lond., 1898, ii, 1325.

BIOCHEMISTRY IN RELATION TO MEDICINE AND HYGIENE.

UNDER THE CHARGE OF
E. A. DE SCHWEINITZ, Ph. D., M. D.
Director Biochemic Laboratory, B. A. I., Agricultural Department.

A New Stain for the Tubercle Bacillus.

Dorset makes the following report upon a method for staining tubercle bacilli: The large percentage of fat present in the bodies of the tubercle bacilli was first noted by Hammerschlag. Subsequently de Schweinitz and the writer, in the conrse of a general chemical study of the tubercle bacillus which is being carried out in this laboratory under the direction of Dr. de Schweinitz, found that the dried bacilli often contained as much as 40 per cent of ether soluble material. Reports upon some of the results so far obtained in the above mentioned work have already been published by de Schweinitz or de Schweinitz and Dorset in the Journ. of the Amer. Chem. Soc., 1895, 1896 and 1898; the Centralbl. f. bakt. Parasit., and in bulletins from this Department.

In pursuance of a suggestion made in one of these earlier publications, that the large amount of fatty material in the tubercle bacilli probaly accounted for the difficulty experienced in staining the bacillus with the ordinary dyes, an effort was made by the writer more than a year ago to stain them with some of the ordinary aniline dyes after the preparations had been extracted with ether and alcohol for varying lengths of time. The results obtained however were not satisfactory.

Shortly afterward my attention was called to the statement that Sudan III was a useful stain for fat in histological and pathological work, and it was immediately tried ubon preparations of the tubercle bacilli. This dye is insoluble in water, soluble however in alcohol with a red color, also in the various essential oils, in chloroform and xylol. Fat once stained with this material can be decolorized with difficulty. Daddi,* who first suggested the nse of Sudan III in histological and pathological work recommends that Müller's fluid and glycerine be used in hardening and fixing the tissues and that absolute alcohol should not be used as a dehydrating agent, nor should the specimen be cleared in the essential oils or xylol nor mounted in Canada balsam.

After trying various strengths of solutions of Sudan III in alcohol it has been found that the following methods give the most satisfactory results.

1. Staining of tubercle bacilli in pure cultures.

Cover glass preparations were made and fixed in the ordinary way and then immersed in a cold, saturated 80 percent alcoholic solution of Sudan III for five minutes. The excess of stain was then removed by washing in several changes of 70 per cent alcohol for five minutes. The results obtained were very satisfactory and the characteristic appearance of the tubercle bacilli could be very readily noted. The bacilli are stained somewhat better if left in the Sunan III for 10 minutes and then washed in the 70 percent alcohol. The germs are found stained a bright red and the l e ıded appearance is very distinct. Cultures of the bovine tubercle bacillus, and also of a tubercle bacillus obtained from swine, treated with this dye, were not apparently as well stained as in the case of the bacillus of human origin. These results should be verified however and further work with these and tubercle bacilli from various sources is in progress.

The human tubercle bacilli stained with Sudan III are not decolorized by washing for two minutes with dilute 1-25 sulphuric, hydrochloric, or nitric acid, or ammonia.

2. Staining of preparations from a gland of a tuberculous guinea pig, and

* Arch.ital. de. Biol., Vol. XXVI, p. 143, 1896, Orig. paper in Giornale d. R. Acc. di medicina di Torino, no. 2, 1896.

from sputum, which had been proved to contain tubercle bacilli.

The preparations were fixed as usual and immersed for ten minutes in saturated 80 per cent alcohol solution of Sudan III. They were then washed from five to ten minutes in 80 per cent. alcohol. Upon examination the tubercle bacilli were found to be stained a distinct red and presented the characteristic appearance. No other bacilli present in the sputum had been stained by the Sudan III, though they were evident in quantity when the preparation was counterstained with methylene blue. The tubercle bacilli still retained their characteristic red color and appearance

3. Sections of a tuberculous lung.

Sections from a lung of a man who died of bronchial tuberculosis* were stained from five to ten minutes in a concentrated 80 per cent. alcohol solution of Sudan III, washed from five to ten minutes in several changes of 70 per cent. alcohol, counter-stained with methylene blue, dehydrated with absolute alcohol, cleared with clove oil and mounted in Canada balsam. In this preparation the tubercle bacilli were stained red and could be distinctly seen lying in the tissue. The material from which the sections were made was prepared in the following way: Pieces of the lung were placed in absolute alcohol and from that passed through alcohol and ether into celloidin in the usual way. The sections after staining were also dehydrated with alcohol, but in spite of this fact the tubercle bacilli were well stained by the Sudan III. It is thus evident that their staining properties are not influenced by the dehydrating action of the alcohol. This differs from the method prescribed by Daddi in staining sections for fat, as he recommends that care should be taken not to dehydrate with alcohol or clear with clove oil. Possibly the fatty material in the bodies of the tubercle bacilli is not as soluble as that deposited in the tissues. It should be noted, however, that preparations stained with Sudan III and mounted in Canada balsam do not retain a bright color after a month's time.

To demonstrate further that Sudan III is apparently a selective stain for tubercle bacilli, I endeavored to stain the numerous varieties of bacteria found in decomposing sputa, pure cultures of hog cholera, glanders, typhoid, anthrax, symptomatic anthrax, diphtheria, and prodigiosus bacilli, the spirilla of Asiatic cholera, and the staphylococcus pyogenes aureus, with negative results. Preparations of the smegma bacilli were also made, but did not stain with Sudan III, although they were stained with carbol-fuchsin according to the ordinary method. In a mixed preparation of tubercle and smegma bacilli, stained with Sudan III, and well washed with 70 per cent alcohol, the tubercle bacilli appeared characteristic while the smegma bacilli remained unstained, although this same preparation when subsequently stained with carbol fuchsin, showed smegma bacilli present in abundance.

It would appear from the results so far obtained that Sudan III may be considered as a selective stain for the tubercle bacillus, and that this selective action is due to the large amount of fatty material present in the body of the germ. When stained with Sudan III the characteristic beaded appearance of the tubercle bacilli is very distinct, and as has been suggested, this beaded appearance in the staining is probably due to the droplets of fatty substance present in the body of the germ. Although smegma bacilli stain very readily with carbol-fuchsin, similarly to the tubercle bacilli, the fact that the smegma bacilli do not stain with Sudan III would indicate that their cell substance is very different from that of the tubercle bacilli.

The practical value of Sudan III as a stain for tubercle bacilli will be recognized where a rapid method is desired for staining the organism in tissues and for the purpose of differentiating without trouble between smegma and tubercle bacilli in cases, as the examination of urinary sediments, where the smegma bacilli might be present, and throw some doubt upon a positive identification of the tubercle bacilli by the ordinary method of staining. The method takes about the same length of time as the carbol-fuchsin method for coverglass prep-

* The material was kindly furnished by Dr. Carroll of the Army Medical Museum.

arations, but as the stain is apparently a selective one for tubercle bacilli it appears to be well adapted for routine work.

Contribution from the Bio-chemic Laboratory, Bureau of Animal Industry, U. S. Dept. of Agriculture. A New Stain For Bacilli Tuberculosis, by Marion Dorset, M. D., First Assistant. New York Medical Journal, 1898.

Pathological Changes Produced by the Venom of Serpents.

The author has made some careful studies upon the character of the lesions produced by the injection of the venom of serpents and scorpions, and after making very careful macroscopical and microscopical examinations comes to the conclusion that the principal organs affected upon a subcutaneous injection into an animal of these poisons, are the liver, kidneys and lungs. When the animal survives a fair length of time, but finally dies, the liver is found to be almost entirely destroyed, due in part to fatty degeneration and in part to necrosis. This is a phenomenon of particular importance from a pathological standpoint. The liver in effect is not only an organ of secretion but it appears also to be designed for the purpose of destroying or neutralizing various toxic materials which infect the organism, both those which come from the intestines as well as others. The venom of the serpent and scorpion produces also in other organs of the body serious lesions, but these lesions are always less marked than in the case of the alterations of the liver and are not so constant. The alterations of the liver are the only ones which can be considered specific. In this particular the venom of serpents and scorpions resembles certain poisons of microbic origin and approach closely to those lesions which are found in yellow fever. Nowak. Ann. d. l'inst. Pasteur, Vol. 12, no. 6, June 25, 1898. Etude expérimentale des altérations pathologiques produits par les venins des serpents venimeux et des scorpions

The Relation of Agglutination to Immunity.

The author has made a study of the relation of agglutination to immunity, and comes to the following conclusions: That immunizing sera for cholera and typhoid act already outside of the animal upon the related bacteria. The action is a specific one and is proportionate to the agglutinating property of the serum. A clumping of the bacilli can be brought about by an indifferent slimy substance, and this absolutely mechanical clumping does not exert any injurious action upon the life of the bacilli. The anti-bacterial action of agglutination is probably due to the swelling of the cell wall. Agglutination of the cholera and typhoid germs also takes place in the animal body and is evidenced by the fact that the bacteria are rendered non-motile and under certain conditions may form clumps. Joseph Trumpp. Arch. f. Hyg., Vol. 33, Hft. 1-2. Das Phänomen der Agglutination und seine Beziehungen zur Immunität.

The Tubercle Bacillus of Fish.

Král has shown that from carp accidentally infected by the human tubercle bacillus, and which show characteristic tuberculous lesions, it has been possible to isolate a germ identical in characteristics with the germs obtained from man. He has found that the bacillus of Koch acquires after passing through cold-blooded animals, the ability to grow at ordinary laboratory temperatures. At the same time while these germs in appearance resemble very closely the tubercle germ they have lost their ability to cause disease in warm-blooded animals. The germ shows in all its properties that it is simply a variety of the tubercle bacilli and not a new species. Under the influence of temperature, physical and chemical re-agents, it has become saprophytic and forms long filaments. Careful study has shown however, that these bacilli were originally of human origin. This is but another fact to show that the tubercle bacillus may change its conditions both in and outside of the animal body, depending upon its surroundings, but these germs are but different varieties of one and the same species. Král et Dubard. Rev. de la

tuberculose, no. 2. July, 1898. Sur le Bacillus Tuberculosus Piscium.

Immunity and the Bacillus Subtilis.

In view of the importance of the invasion of the animal organism by spore bearing bacteria the author has studied the effect of a saprophyte which is very common in nature, namely the bacillus subtilis, upon the body of the rabbit. He comes to the following conclusions: That the normal serum of the rabbit destroys in vitro the spores of the bacillus subtilis. This property is due very probably to the substance which forms in the destruction of the leucocytes. The spores of the bacillus subtilis introduced into the body of the rabbit in different ways are taken up by the leucocytes and have their development arrested. Serous exudates rich in leucocytes approach more nearly the action of the normal serum upon the bacillus subtilis. Podbelsky. Ann. d. l'inst. Pasteur, Vol. 12, no. 7, July 25, 1898. Contribution a l'etude de l'immunite vis-a-vis du bacillus subtilis.

Conservation of Typhoid Bacilli in Cider.

The author has made a study of the length of time that the typhoid germ will live in cider, and has found that the germ is destroyed from 2 to 18 hours after the cider has been contaminated provided the acidity of the liquid is so great that it contains as much as 2 grams malic acid. The bacillus will live from 3 to 4 days if the acidity of the cider is only 8-10 to 1 per cent of malic acid or for 20 days if the liquid is neutral. Ordinarily cider, after the fermentation, contains a greater amount than 2 per cent of malic acid and consequently the typhoid bacillus introduced into this could be destroyed in about 18 hours. Otherwise cider contaminated with typhoid fever bacilli, either from the mash or from the water, if not sufficiently acid will produce typhoid fever upon ingestion in the same way as water alone infected with the typhoid germ. E. Bodin. Ann. d. l'inst. Pasteur, Vol. 12, no. 7, July 25, 1898. Sur la conservation du bacille typhique dans le cidre.

The Production of Sorbose.

Sorbose is a sweet substance with a formula $C_6H_{12}O_6$ discovered by Pelouze in 1852. He found this in the juice of the berries of the mountain ash. Various workers have since his time endeavored to obtain the same sugar from this plant but without success. The author has investigated the subject and found that sorbose does not exist preformed in the juice of the mountain ash. It is formed in this juice by the oxidation of the sorbite under the influence of a bacterium analogous to or identical with the bacterium xylinum of Brown. If this bacterium is cultivated in a suitable medium which contains sorbite there is a transformation of the sorbite into sorbose, in many cases 80 per cent of the theoretical amount being obtained. Gabriel Bertrand. Ann. d. l'inst. Pasteur, Vol. 12, no. 6, June 25, 1898. Récherches sur la production biochimique du sorbose.

Immunity of Monocellular Organisms in Toxins.

The author has investigated the behavior of monocellular organisms towards the poisons of diphtheria and tetanus germs, and concludes that their insusceptibility is due to the absence of all chemotactic positive or negative action of these poisons upon the organisms. He thinks therefore that the immunity of these monocellular organisms towards these poisons is an argument in favor of the theory that the natural immunity of higher animals results from the insusceptibility of the living cells to the action of these poisons. O. Gengou. Ann. d. l'inst. Pasteur, Vol. 12, no. 7, July 25, 1898. Sur l'immunité naturelle des organismes monocellulaires contre les toxines.

The Influence of the Ingestion of Water Upon Evaporation and CO_2 Exhalation.

The author made some studies upon the influence of taking into the system varying amounts of water upon the amount of water evaporated by the body and the carbon-dioxide exhaled. His experiments showed that there is no direct connection between these factors. P. Laschtschenko. Arch. f. Hyg., 33, Hft. 1-2. Ueber den Einfluss des Wassertrinkens auf Wasserdampf und CO_2 Abgabe des Menschens.

Therapeutic Notes.

A New Malt Preparation.

The value of malt extract in amylaceous dyspepsia is now well recognized, but the results obtained from its use will always depend upon the preparation employed. If the thin liquid form—which is really little more than a good beer and contains practically no diastase—be used, both the physician and the patient will be doomed to disappointment. In the other class of malt extracts, while some of them are rich in diastase they are at the same time so thick and syrupy that it is difficult to persuade a patient that such a preparation will be of benefit in a trouble which he knows to be aggravated by sugary substances. The Malt-Diastase Company, No. 1 Madison avenue, New York, has recently placed upon the market a new preparation, Maltzyme, which, while palatable, perfectly limpid, and of only a very thin syrupy consistency, has the power of converting forty times its weight of starch into maltose. With these points in its favor, Maltzyme is a preparation which deserves a fair trial by physicians in treating one of the most troublesome affections with which they have to deal. —*Medical Register.*

Neurasthenia.

From a clinical report by Keating Baudry, M. D., we take the following:

Case I.—Mrs. S., aged 32 years, mother of three children, came to me in a pitiable mental condition, and had in her arms a nursing hydrocephalic child, five months old. Her mental depression approached a type of veritable melancholia. My first idea was to advise that the child be weaned, and then place her upon the classical opium treatment for melancholia. This was her third child, and, like all mothers, she clung to the life of her unfortunate with characteristic tenderness. Therefore she bluntly insisted upon my candid opinion as to whether the weaning of the baby might prove fatal. Knowing, as I did, that the life of the child was simply a question of a period of short duration in either case, I so informed her; nevertheless, I insisted that the best hope for her recovery was to wean it. This she refused to do, and, after Dr. Fisch had made a blood examination and pronounced her highly anæmic, I reluctantly undertook the case. Aside from her mental depression, physical lassitude, and marked pallor, the "casque neurasthenique" symptom was a dominant feature in her case. Any effort to perform her usual household duties produced sensations of cerebral fulness, and persistent pain in the vertex. She even confessed that the idea of suicide had of late frequently haunted her. Under the administration of "Pepto-Mangan," with no other treatment after the short period of fifty-two days, she was discharged fully restored to her normal condition. Microscopic report showed a relative gain in number of red blood corpuscles of 34 per cent; hemoglobin, 44.5 per cent.

Syr. Hypophos. Co., Fellows.

Terrytown, Penn., Aug. 14, 1883.

I write to thank you again for the Syrup of Hypophosphites you kindly sent me. Formerly I could speak of the good your syrup had done others. I can now testify to the benefit I have received from it myself. My cough and hoarseness, which had been of four months standing, left me by the time I had taken three bottles. I found a table-spoonful twice or thrice a day was about the proper dose. I have requested our druggist, Mr. Allis of Wyalusing, to keep a supply of it, and I have already sent two patients to him for it. Persons who commence with the Hypophosphites should be forbidden to use other cures with it. The medicine alone, with proper care and hygienic measures, will relieve, if not entirely cure, all chronic pulmonary diseases. If it is not cito it surely is tute et jucundo, as a remedy for disease. Were it a little less expensive, it would be much more extensively used than it now is. But compared with many other cures it will be found less expensive than any of them in the long run, for it cures while others fail. Very truly yours,

GEO. F. HORTON, M. D.

Modern Vaccine Plant.

The spirit of improvement has seized upon vaccine material and vaccination, and the result is glycerinated vaccine lymph, more successful vaccinations and much less suffering to the child. This new form is vaccine virus purified and preserved by means of glycerin and is now prepared in this country in the special vaccine laboratory of H. K. Mulford Company recently erected on their Biological Farm at Glenolden, Del. Co., Pa. The laboratory is entirely distinct from the general laboratory and is situated between two separate stables to which it is connected by verandas. This enables the employment of one while the other is being disinfected. The entire plant combines all the best features of all the most modern and improved vaccine establishments of Europe and is easily the best equipped in the world.

We believe the reputation of their Concentrated Antitoxin will not fail to commend the new and improved product to the medical profession.

Habitual Constipation.

Many saline laxatives and carthartic pills are contraindicated in the treatment of habitual constipation on account of their tendency to deplete the system too rapidly. Physicians frequently report a progressive inefficiency from their continued use. Doctors say the more one takes of salts and pills the more constipated the system becomes, while on the other hand one enjoys both the method and results when Syrup of Figs is taken; it is pleasant and refreshing to the taste and acts gently yet promptly on the kidneys, liver and bowels, cleanses the system effectually and overcomes habitual constipation permanently. The great trouble with all other purgatives and aperients is not that they fail to act, when a single dose is taken, but that they act too violently. Ladies and children enjoy the pleasant taste and gentle action of Syrup of Figs, find it delightful and beneficial whenever a laxative remedy is needed; for business men it is invaluable, as it may be taken without inconvenience and does not gripe nor nauseate.

The Best Serums.

The physicians of Washington should remember that the Diphtheria Antitoxic Serum made in the Pasteur Institute, Paris, France, under the direct supervision of Roux, and the Antistreptococcus Serum produced in the same institution under the direction of Marmorek, are for sale by W. C. Downey & Co., (The Portland Drug Store), who are sole agents in this city for these preparations. All are aware of the potency and effectiveness of these serums. Note the exceedingly low prices which are asked for them.

Roux's Diphtheria Antitoxin:
2500 Units in 10 c. c.—$2.50.
2500 " " 5 c. c.—$3.00.
Marmorek's Antistreptococcus Seru
10 c. c.—$1.50.

Coughs and Colds.

The climatic changes incident to this season of the year, call for a remedy which is at once effective and agreeable. Bronchial and pulmonary affections are promptly benefitted by the use of Gray's Glycerine Tonic Compound (formula of Dr. John P. Gray) and coughs and colds speedily disappear under its use. It is, moreover, a stomachic corrective of proved efficiency, promoting assimilation and nutrition, and is of marked value in all phases of debility.

Comfort and Health.

A prominent medical man, a well-known professor in one of our colleges, was induced by the Deimel Linen-Mesh Co., 728 Fifteenth street, to make a trial of their linen underwear. He reports that his health and comfort have steadily improved since he put on his first suit of linen underwear, and he declares that, in his opinion, it is especially adapted for the use of children, as they take so much exercise and perspire so freely even in mid-winter that they require an underwear which absorbs moisture, quickly dries, and properly regulates the radiation of heat. Deimel Linen-Mesh serves all these purposes.

TRANSACTIONS OF THE MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA.

EDITING COMMITTEE:

W. W. JOHNSTON, M. D., GEO. M. KOBER, M. D., JAS. D. MORGAN, M. D.

MEETING OF MAY 18, 1898. Dr. S. C. Busey, President, in the Chair.

[Continued from November Number.]

SARCOMA OF CERVICAL GLANDS; SECONDARY SARCOMA OF LUNG WITH SPECIMEN.

By W. W. JOHNSTON, M. D.

April 27. Cervical tumors apparently diminishing in size. Cough, dyspnoea, heart weakness, and dysphagia increased. Losing power of phonation.

April 28. Phonation lost. Occasional voice sounds during efforts at coughing.

April 29. Dr. Richardson in consultation examined the larynx and observed a catarrhal inflammation of one of the vocal cords; larynx and upper part of trachea otherwise normal; no evidence of narrowing from external pressure, and no paralysis of vocal cords.

From this time the patient grew rapidly weaker. Her appetite continued good, but she lost flesh, and there was an apparent shrinkage of the cervical tumors. The dyspnoea increased, insomnia was not relieved by opiates, and she died suddenly on May 1st.

Autopsy. The pleural cavities and pericardium were filled with the fluid. The lungs were free from adhesion.

The lungs and organs of superior mediastinum were removed. Both lungs showed abundant, well-defined, firm, whitish nodules, varying in size and shape, and mostly situated in the periphery beneath the pleura. There was also a large multinodular whitish mass of the same nature, involving peritracheal glands and perioesophageal glands surrounding and compressing the great vessels, the œsophagus and the trachea. Nodules were also seen in the mucous membrane of the trachea and larger bronchi causing elevations and in places destruction of the mucous membrane. The bronchial glands were enlarged and were firm, whitish, and with black pigment. The nodules in the lung and masses at the root of the lung were found to be a mixed-cell sarcoma.

The points of interest in connection with this case are:

1. The absence of emaciation with rapid increase in the sarcomatous tumors, and the improvement after the operation, although it was incomplete.

2. The development of secondary sarcoma in the left lung, the large mass at the root of the lung, and the extensive dissemination throughout the periphery of the lung and nodules in the tracheal

and bronchial mucous membrane. These were more numerous in the left lung than in the right and especially in the anterior part of the upper lobe. This was also true of the right lung.

REPORT OF THE COMMITTEE ON PUBLIC HEALTH ON MALARIAL FEVER IN THE DISTRICT OF COLUMBIA.

The committee on public health presented to you in February the result of its investigations in typhoid fever in the District of Columbia. It desires this evening to report upon certain facts connected with malarial fever.

At the request of Dr. R. T. Holden, the member of the committee who had this branch of inquiry especially under his charge and to whom all the labor of its preparation has fallen, the Superintendent of Public Schools prepared a table embodying the total enrollment in the public schools of the District within a specified time, the number of days lost through absence, the number of days absence caused by, or attributed to malarial fever, typhoid fever, scarlet fever, diphtheria, etc. This vast mass of statistical information your committee lays befor you, together with two tables in which the data relating to malarial fever are condensed and analyzed, and a map that represents graphically the relative loss in attendance due to malarial fever in the different school sections in which the District is divided.

Since your committee feels so greatly indebted to the Superintendent of Schools for the immense pains which he has taken in the preparation of these figures and the hearty sympathy he has shown with the objects of this investigation, it is with considerable reluctance that it is forced to admit that the figures recorded in the accompanying tables are of questionable value in so far as furnishing positive data as to the amount of malarial fever in the public schools is concerned. Even statistics founded upon death returns are sometimes open to criticism, and your committee does not feel that the diagnosis of malaria in the cases under consideration is final unless it has been supported in each instance by the opinion of the attending physician, and with so many cases this was impossible to determine.

But still the main point upon which it was desired to gain knowledge was not so much the amount of malarial fever among the public school children as the relative prevalence of this disease in the different sections of the District—in other words comparative and not positive data. And here the figures in question furnish us with very extensive information, and, we believe, since the same errors are likely to obtain everywhere, accurate information.

The accompanying map shows the ratio of the number of days absence due to malarial fever to one hundred days absence due to all causes in each of the eight school sections of the District. The standard used in the construction of the circles was one millimeter, representing one day's absence due to malaria to one hundred days absence from all causes. (It has been found impossible to reproduce this map and inadvisable to print at length the tables which are referred to above. The accompanying table however gives in brief all the desired facts.—Eds.)

R. T. Holden and G. W. Johnston,
of the Committee on Public Health.

Northwest.....8 per cent
Southwest.....30 per cent.

Northeast	18 per cent
Southeast	36 per cent
Georgetown	7 per cent
Country West of Rock Creek	18 per cent
Country Between Rock Creek and Anacostia River	8 per cent
Country East of Anacostia River	50 per cent

DISCUSSION

Dr. S. S. ADAMS referred to the fact that, in 1879 and 1880, the largest number of patients suffering with malarial fevers brought to the Children's Hospital came from west of 17th Street and south of Pennsylvania Avenue. The report of the committee showed a great improvement in this portion of the city, which has been the result of improving the Potomac Flats.

Dr. BUSEY referred to the bill which had passed Congress making appropriation for a preliminary survey of the Anacostia Flats, and to the satisfactory results obtained by the efforts of the Medical Society in this connection.

Dr. MAGRUDER said that the mere improvement of flats will never thoroughly eradicate the malarial conditions. The chart confirmed the opinion of those who believe that malaria is a "water-borne" disease, pump water being mostly used in those sections of the city where malaria has the greatest prevalence. Dr. Magruder accounted for the large spot north of Georgetown by the fact that that portion of the city is not well sewered.

Dr. WOODWARD agreed with the committee that the sources of information were very unreliable, yet he thought they must indicate, with a reasonable degree of accuracy, the points in the District where there is the greatest prevalence of malarial disease. He did not consider that the information given on the map indicated in any way that the prevalence of malaria is due to the water supply, the largest spots being found nearest the swamps. The Anacostia flats, or swamps, continue to increase in size, and until something is done to remove this condition malarial fevers will prevail there.

Dr. W. W. JOHNSTON said he regretted the disposition to regard the diagnosis of malarial as an easy matter, there being no disease prevailing in this country in which the diagnosis is more frequently erroneous. The essential point of the investigation is that the neighborhood of the Anacostia River is the malarial center of Washington, and the report does not support the theory that the disease in this neighborhood has anything to do with the water supply.

Dr. G. W. JOHNSTON said that the days' absence from school increased according as the pupils lived nearer the river.

Dr. KOBER mentioned that, in the early history of Washington, the Anacostia River was navigable up to Bladensburg, but has gradually been filled up, by the erosive action of streams and the silt carried by a large sewer in the northeast.

Dr. BUSEY said that L'Enfant in 1791 called attention to the fact that the water in the Anacostia River varied from 5 to 5½ fathoms in depth from its mouth to about where East Capital street is now; 50 years ago there were about 8 to 10 acres of Anacostia Flats; now their extent is nearly 1000 acres.

Dr. G. W. JOHNSTON read a paper on "The Necessity of Accuracy and Uniformity in Clinical Laboratory Investigation," which was published in the Nation. Med. Review for June 1898.

MEETING OF MAY 25, 1898.

The President, DR. BUSEY, in the Chair.

FISH BONE IN THE APPENDIX.

Dr. Glazebrook presented a vermiform appendix which upon being opened, contained a small piece of fish bone which had not set up any inflammatory condition by its presence.

DISCUSSION.

Dr. STORCH said that recent authorities hold that it is a pathological impossibility for any foreign substance to get

into the appendix, but this case apparently controverts that statement.

Dr. VAUGHAN has had in his personal experience two cases where pins were found in the appendix, and has seen several where cherry stones have been found.

Dr. BUSEY referred to the statement of Fitz that from 10 to 12 per cent of all cases of appendicitis result from the presence of foreign bodies.

Dr. LAMB presumed that this included cases of concreted feces.

NAUSEATING EXPECTORANTS, AS USUALLY ADMINISTERED, USELESS, AND OFTEN INJURIOUS TO THE PATIENT.

BY ROBERT REYBURN, M. D.,
Washington, D. C.

The writer has a medical friend (now in Japan) who had a favorite expression he made use of, when wishing to strongly emphasize his opinion of the uselessness of any course of procedure. He would say that it was about as effectual as the use of castor oil upon a graven image.

Strong as the above expression may appear to be, it exactly harmonizes with what the writer believes to be the effect of nauseating expectorants such as squills, ipecac, etc., when given as they often are given in continued doses, in cough mixtures for bronchial affections.

Take for instance these cough mixtures so often given to children which usually contain solutions of citrate of potash and acetate or citrate of ammonia or muriate or carbonate of ammonia and syrup of squills or ipecac and often opiates.

Let us consider for a moment what the therapeutic action of such a mixture must be when taken into the human stomach. Squills and ipecac popularly enjoy the reputation of loosening a cough. The only possible way in which they can do so, is by keeping up more or less pronounced nausea. This nausea will of course diminish the severity of the paroxysms of coughing, but it does so at the expense of the digestive organs. Every one knows that the induction of nausea retards very greatly, if it does not entirely stop for the time being, digestion. We believe, therefore, that the use in continued doses of these nauseating expectorants should be entirely discontinued. The question may be asked, have nauseating expectorants no therapeutic value? We would answer that they should only be used in the manner about which we will now speak. We would recommend strongly the use of full single doses of these agents as emetics in the bronchial catarrh of children, for the purpose of freeing the bronchial tubes from the tough tenacious mucus which fills them and impedes respiration. But let us proceed to analyze our prescription a little farther. The muriate or carbonate of ammonia are undoubtedly useful by thinning and liquifying the tough bronchial secretions; but is it not a very clumsy way of giving it in a mixture, to be swallowed, and thence pass by the digestive system through a round-a-bout way to the lungs.

Can we not therefore apply our medicaments directly to the lungs without the intervention of the stomach and digestive system? We answer, this can be done easily and certainly by giving our medicaments in the shape of spray or atomized vapors. These can be given to the youngest child without injury, and produce rapidly their therapeutic effect.

If, for instance, we wish to give carbonate or muriate of ammonia to a child it will be very easy to make a simple solution in water, (with the addition of glycerin to diminish the pungency of these salts) and spray it in the mouth and throat of the child by means of the hand atomizer, which can now be found in almost every house.

If this is done gently and with a little tact the child soon become accustomed to it, and it will be found not to inspire anything like the disgust, that attends the administration of the usual expectorant mixtures.

Oily medicaments required in cases of bronchial catarrh, croup, etc., can also be given easily in the form of spray. Balsam of Copabia for instance when dissolved in albolene or liquid vaseline, can be sprayed in the child's throat with very little discomfort or objection on the part of the child. Any one who has experienced the difficulty and sometimes impossibility in wilful children of the administration of such drugs by the mouth, will gladly hail the spray method as a decided advance.

Of course it will be readily understood that small doses of opiates or any other drugs can also be administered, and medication in this way can be varied to suit the requirements of each case.

The use of opiates, however, in the bronchial catarrh and bronchitis of young children is a double-edged sword, and they should be used with very great caution ; while they are potent for good in careful hands, yet they are still more potent for harm.

In regard to use of the coal tar compounds (phenacetin, acetanilid, etc.,) in these above-mentioned diseases in young children, we are strongly inclined to abjure entirely their use.

One of our most popular text books on the Diseases of Children (Starr's Text Book on Diseases of Children), in the article on Bronchitis, recommends phenacetin in one grain doses to be given every four hours to infants six months old and in doses of two grains to children two years of age. We believe such doses to be very dangerous and have a vivid recollection of two young children who just escaped death as the result of the administration of phenacetin in the doses above mentioned.

Finally, we recommend in all cases of diseases of the bronchial mucous membranes, to give the medicine as far as possible by the bronchial mucous membranes, and not by the digestive organs.

DISCUSSION.

Dr. Smith said relative to Dr. Reyburn's suggestion as to use of sprays. he doubted if a sufficient quantity of the drug can be gotten into the lungs of a child in this way.

Dr. J. D. Morgan did not believe that sprays of the preparation of ammonia are of use in children. The nauseating and stimulating expectorants both have their uses, the first depress, and are used in acute inflammatory conditions of the respiratory tract ; the second, which contract and lessen the blood pressure, are used in chronic, or sub-acute cases. The first act by increasing the blood pressure and depressing the unstriped muscular fibre of the bronchial tubes, increasing the secretion. The cough in children is more reflex than in adults, and the respiration will be much impeded and the heart interfered with in children because of their using no voluntary efforts to expel the secretion from the small bronchi, and for this reason it may be necessary to combine cardiac stimulants with the nauseating expectorants.

Dr. Adams said his experience differed very widely from that of Dr. Reyburn, and he agreed with Dr. Morgan and

others as to the difficulty experienced in using sprays on children. If the child makes an inspiratory act, a few drops of the solution will touch the epiglottis and spasm will take place with the resulting paroxysmal cough which absolutely defeats the object. In acute spasmodic croup nothing will act as quickly as a preparation of ipecac given in sufficient doses, frequently repeated until emesis is produced. In order to get medication through the respiratory tract, the patient must be placed under a tent and the air impregnated with medicated steam. The so-called expectorants have no effect whatever in catarrh of the smaller bronchi, or in broncho-pneumonia. The rational treatment as regards phenacetin would be to use the antipyretic in those cases in which there is an elevation of temperature sufficient to produce nervous disturbances.

Dr. Chappell said he used the nauseating expectorants in children.

Dr. Behrend said that carbonate of ammonia rarely produces nausea The only positive knowledge with regard to it is that it is taken up by the blood and acts on the mucous membrane, with great benefit to the patient. In bronchial diseases he gives very little medicine, but depends upon nature and rarely gives nauseating doses of expectorants. Sometimes, where there is local irritation, he gives an antispasmodic with a little paregoric, or the extract of hyoscyamus.

Dr. Kober referred to an old quotation: "Medicines in the hands of inexperienced persons are likened to poisons, but in the hands of experienced persons are to be likened to the water of everlasting life," and believes that this statement, made over 2,000 years ago, applies to the use of expectorants.

Dr. Butler said that in time the class of drugs known as expectorants would be obliterated from our materia medica. He did not agree with Dr. Reyburn as to the use of sprays in children, and made the point that by inhalation it takes some time for the residual air of the lungs to become saturated with the drug. The rational method of treatment is to endeavor to control any congested condition of the bronchial mucous membrane by baths and attention to the alimentary canal.

Dr. Reyburn, in concluding the discussion, said in some cases of bronchial catarrh a dose of ipecac is advantageous, but it should not be given continuously, and should be administered in the interim between meals. Regarding the use of sprays, he first employed them in diphtheria, and has since extended their use. If care is exercised they can be used satisfactorily; his argument was to spare the stomach and give the medicine by the use of sprays or vapors. Referring to phenacetin and other coal tar preparations, he recited two cases illustrating the danger of excessive doses of phenacetin, and said that, under no circumstances, should more than two or three doses be left in the house since as many people have been killed by the use of these preparations as by the opiates.

Meeting of June 1, 1899.

The President, Dr. S. C. Busey, in the Chair.

BROKEN NECK.

By George Tully Vaughan, M. D., Washington, D. C.

Definition.—A broken neck means a fracture or dislocation or both of one or more of the cervical vertebræ.

There is seldom a disarticulation without a fracture, hence the compound term "fracture dislocation," but there frequently exists a fracture without disarticulation.

Diagnosis.—This is usually easily made by the complete paralysis of motion and sensation which takes place in all the parts supplied by nerves which emerge from the cord below the lesion.

This however is not a constant symptom, as in glancing over the literature, I have found three cases of broken neck reported without paralysis—one of them being proved by skiagraphs.

Deformity—may be detected with the finger in the pharynx or by feeling a depression between two spinous processes.

Crepitation—is sometimes detected—not often. According to Courtney, 3 or 4 times in 150 cases.

Tenderness—on pressure over the injured part is nearly always found.

Change in Pupils.—If the cilio-spinal center is irritated, there should be dilatation; if destroyed, contraction of the pupils.

Prognosis and Treatment.—The prognosis is grave—all the cases I have seen have died. There is considerable difference in the statistics given.

Thus Ashhurst in an essay published in 1867 gives, cervical dislocations, 104 cases; recovered, 33—31 per cent; relieved, 2; died, 68—65 per cent; cervical injuries, 212 cases; recovered, 17.9 per cent; died, 77.3 per cent; while Courtney gives 150 cases of fracture of the spine tested at the Boston City Hospital from 1881 to 1897, of which 50 were in the cervical region, and all 50 died in from a few hours to one month. Five were operated. Several cases have been reported of reduction of the dislocation with recovery. Walton reports several cases and other surgeons have reported cases.

The question of operating is one of the greatest importance.

I know of no case, though I have not examined the literature thoroughly, of recovery after laminectomy in the cervical region, though many have been reported after this operation in the dorsal and lumbar regions.

In deciding whether or not to operate, the presence or absence of the patellar-tendon reflex plays an important part, the rule being that absence of this reflex indicates complete transverse destruction of the cord and operation would be useless, but cases reported prove that this is not always true.

A case of broken neck should be treated

1. By extension and counter-extension, or by Walton's method of "retro-lateral flexion towards the side towards which the face looks and then rotation back to the normal position," especially if there is any deformity.

Danger of sudden death should be borne in mind according to Dupuytren, though no cases have been reported.

2. This failing to relieve, laminectomy should be done, as offering the only chance to the patient, though it may not be successful more than once in fifty cases.

3. Absence of patellar-tendon reflex is not invariably a contraindication to operation.

4. Fracture-dislocations in the cervical region are far more serious than those occurring elsewhere, but not necessarily hopeless.

5. Operation if done at all, should be done at the earliest possible moment, before degeneration of the cord takes place.

A Case of Fracture of the Sixth Cervical Vertebra.

H. M. B., white, male, aged 37 years; native of Va.; occupation street-car conductor was admitted to Emergency Hospital during the night of April 28th 1898.

Patient had been drinking and was thought to be drunk. There was a scalp wound about one inch long extending to the bone on the left side of the vertex near the parietal eminence.

Next morning, April 29th the patient presented the following symptoms:

Mind perfectly clear; pupils slightly dilated; no pain anywhere; stiffness of the neck and pain on moving it, but he could move his head quite freely in spite of this. Paralysis of motion and sensation, complete, from about one inch below each nipple, down.

In the right upper extremity sensation was paralyzed to a point just below the elbow, all the muscles were paralyzed except the biceps, brachialis anticus, deltoid, supra-and infra-spinatus. Patient could flex, but could not extend, the forearm; he could rotate the shoulder (arm) outward, but not inward.

The left upper extremity was more completely paralyzed, there was anæsthesia from about the insertion of the deltoid, down. The supra-and infra-spinatus were the only muscles not paralyzed, so that the only motion was external rotation of the shoulder.

Reflexes:—Plantar reflexes could be elicited, but neither cremasteric nor patellar tendon reflexes.

Temperature was 97° F.; Pulse 85.

Examination of the neck:—A finger in the pharynx failed to detect any abnormal projection.

Externally, a tender point was found just above the seventh cervical spine and the bone seemed to give way on firm pressure No crepitus was felt.

In the absence of deformity it was decided to wait a little while, hoping for improvement without operation.

There was none. Drs. E. L. Thompkins and W. P. Carr were asked to examine the patient and agreed with me as to the propriety of operating.

Operation.—April 30th, about forty hours after the receipt of the injury, the patient was chloroformed and the spinous processes of the cervical vertebræ exposed from the second to the seventh inclusive.

On exposing the laminæ it was found that the laminæ of the sixth had been driven downward so as to be contained within those of the seventh, visibly compressing the spinal cord. There was a slight fracture of the spinous process of the sixth vertebra which enabled it to slip into the laminæ of the seventh.

The spinous processes of the fonrth, fifth and sixth and the laminæ of the fifth and sixth vertebræ, were removed and search made on the sides and anteriorly without finding any other pressure on the cord.

There was no evidence of hemorrhage and the dura mater was not opened.

Closure of the Wound.—This was done with two layers of buried catgut to bring the wounds together and one of silkworm gut externally, leaving a drainage tube extending nearly to the cord. Gauze dressing and plaster of Paris bandages were then applied.

Stopping of respiration.—The patient stopped breathing soon after the operation was begun, but was soon restored by artificial respiration, and the operation was continued without further mishap.

An hour after the operation the pulse was 67, temperature 37.9° (100^{2} °), respiration 20.

May 1st.—Temperature 36.7 C. (98 F.), pulse 48, in the morning. In the afternoon the temperature dropped to 35^{3} (95^{6}), pulse 50. Stimulation restored temperature nearly to normal.

May 2d.—Morning temperature 36.9 C.

98.4 F.), pulse 60. In afternoon, temperature 37.9 C. (100° F.), pulse 72.

May 3d.—Morning temperature 38° C. (101° F.), pulse 66; afternoon 38° C. (102 F.), pulse 70.

Wound dressed.—Slight suppuration. Crinoline substituted for plaster of Paris. Patient perfectly conscious and free from pain. Death occurred suddenly in the night.

Necropsy, May 4.—The spinal cord was removed entire. There was no pressure to be detected. There was no point of hemorrhage beneath the membranes. Opposite the sixth cervical vertebra, the cord was contused and pulpified.

DISCUSSION.

Dr. GLAZEBROOK referred to the statement of Dr. Vaughan that disarticulation of the vertebræ is usually not associated with fracture, and said that this has not been his experience.

Dr. REYBURN said he has seen a number of cases of gun-shot fracture of the vertebral column. He referred to a case of dislocation of the fourth cervical vertebra on the left side; the patient was brought to the hospital about 14 days after the accident; there was no question about the dislocation, and there was no fracture. The dislocation was reduced, but the pressure of bone upon the spinal cord had continued so long that the man died about three months afterward. Dr. Reyburn said an attempt should be made at reduction in these cases. He did not see why the surgeon should operate in cases of injury to the spinal column unless it is evident that a piece of bone is pressing upon the spinal cord. Many more cases of recovery in such instances would result if a plaster of Paris dressing were used and the patient left quiet.

CHRONIC INTERSTITIAL NEPHRITIS OR CIRRHOSIS OF THE KIDNEY.

By LARKIN W. GLAZEBROOK, M. D.

Much confusion still exists in regard to the classification and differentiation of diseases of the kidney. It is not my purpose to deal with the classification in the time allotted me, but merely to call your attention to the subject of cirrhosis, in its connection with the kidneys.

Synonyms:

Chronic productive nephritis.
Chronic Bright's disease.
Granular kidneys.
Chronic indurative nephritis.
Gouty kidney.
Renal sclerosis.
Contracted kidneys.
Chronic diffuse nephritis.
Small red kidney.
Nephritis vera.
Asterio-sclerosis affecting the kidney.

Definition—The above names have been applied to this condition; we therefore conclude that it is a chronic inflammation of the kidney attended with a new growth of connective tissue in the stroma; permanent changes in the glomeruli; degeneration of the renal epithelium, with, at times, changes in the walls of the arteries, either primarily or as the result of a general disease. The organ varying in color and size, according to the stage of the disease.

Etiology.—The condition is more common than generally supposed, and often escapes the attention of the busy practitioner and is only recognized at the necropsy.

Age.—Rarely met with during childhood, at times, however, it follows acute parenchymatous nephritis.

Predisposition increases after the age of 30. From compiled reports we find the conditions more common between the age of 40 and 60.

Sex.—The disease affects the male more often than the female, in the proportions of two to one.

Environment.—Persons debilitated and in poor health are more liable. Heredity also may be mentioned. Dickenson reports

a case in which there was a tendency to the disease in four generations. It seems more common among the poorer classes. We are more apt to meet the disease in our hospital and dispensary practice, than among the better class. Osler, however, considers the condition more common among "high livers" and busy men, who undergo nervous strain.

Climate.—Exposure to cold and wet is an important etiological factor. More often met with in humid, marshy localities along the seashore. In this connection I offer the following table which was prepared after perusal of the District of Columbia Health Reports for the last five years. I have, however, taken all the diseases reported affecting the kidneys:

July, August and September	240
October, November and December	247
January, February and March	267
April, May and June	285
Total	1,039

From this general table, you will note that there is a difference between the different months of the year. The disease is more common in the Temperate zone.

Diseases.—Malaria, syphilis, gout, arterio-capillary fibrosis (many valuable observers, consider this condition in the organs, merely a lesion of the general disease and that the subsequent atrophy is merely a secondary pathological condition.) Lithæmia, diabetes mellitus, rachitis, scrofula, hydronephrosis, chronic pyelitis, gonorrhœa, urethral stricture, acute articular rheumatism, caries; and at times a complication of pregnancy, and acute interstitial nephritis, following the exanthemata.

Drugs.—Chemical substances 1. Alcohol. 2. Lead. 3. Uric acid.

In such an epitome of my paper I cannot discuss at length the relation these substances bear to the disease, the class however is unquestionably an important one, in connection with the cause of the conditions.

I will merely say that "meat eaters" and those using a large percentage of this variety of food are very liable.

Patholological Anatomy.—Both organs are affected, as a rule in the same degree. There is at times a marked variance in the size of the organs, the two together may weigh only 450 grains (case reported by Guy's Hospital), or again they may weigh from 30-40 ounces. The organs at times are of normal size. As a rule there is a larger amount of adipose tissue surrounding the organs than is normal. The course of the disease, as I have said before, is chronic. The most characteristic appearance, micro-and macroscopically, is the increased growth of the fibrous stroma.

If examined early in the disease, the organ is either normal in size or slightly enlarged, capsule slightly adherent. Beneath the tunic, there may be no granulation at this stage and the cortical substance is thickened.

Later, the capsule is seen to be more fibrous, is thickened and firmly attached, so that it is impossible to separate it from the organ, without tearing portions of it. The surface under the tunic is uneven, granular. There may be one or more cysts, extending down into the organ. The kidney appears of a dirty yellow or red color. The cortical substance is now either obliterated or remains as a dense, thin, fibrous band. The organ as a whole feels firm and tense.

The color, whether white, yellowish or red, depends upon the amount of blood present, this being the case, we need not in classifying separate the "small

white kidney" from the "contracted red kidney." The fibrous element is most marked in the cortex. On section, the pyramids are darker than the cortex, and the fibrous element is more diffuse. The pelvis may be enlarged and even distended, at times uric acid concretions are found in the tubes and in this portion of the organ.

Microscopically.—The destructed renal parenchyma, is replaced by cicatricial connective tissue.

1. Epithelial cells, atrophied, degenerated, are seen to be flattened, swollen and cuboidal in shape.

2. Uriniferous tubules, compressed and obliterated, at times hyaline casts appear, always have a change in the epithelium. The tubes that do not become obliterated, are distended with clear fluid or coagulated material, forming a cyst, the latter are found as a rule nearer the capsule. Deposits of urate of soda are at times seen.

3. Glomeruli.—Tufts are swollen and multiplied, many are atrophied and changed into connective tissue, may find encapsulated hyaline structure. The atrophy in the tufts is due to the changes in the capillary walls and multiplication of cells between the loops.

Greenfield asserts that the primary change is in the glomeruli and that the degeneration of epithelium in the tubes and intertubular connective tissue, is secondary.

4. Arteries.—Advanced sclerotic changes, walls are thickened, usually the external coat. The muscular coat is hypertrophied, as a result of the periarteritis and endarteritis, the circulation is markedly impeded. In this connection I will refer to Gull and Sutton's observations. These able writers declare that the diseased kidneys are merely an evidence of the general disease, general arterio-capillary-fibrosis. Weigert asserts that the atrophy of the cells, etc., is a result of toxic substances, alcohol, lead and uric acid.

Heart.—Hypertrophy of the left ventricle is a necessary accompaniment to the condition in the kidneys, following the "stop-cock" action in the vessels of these organs. The hypertrophy is a gradual one and so long as the compensation is sufficient, even though the kidneys may present serious damage, very little evidence may be given of any special disease. Cohnheim thinks the hypertrophy due to greater tension in the capillaries not diseased, which means that the entire quantity of blood passes through a smaller number of vessels. Extra work is therefore thrown upon the heart. Myocarditis or dilatation may complicate the hypertrophy, these complications are in turn followed by the secondary sequelæ of chronic heart diseases.

Symptoms.—Let me first lay especial emphasis upon this fact that the condition is most insidious, and that for our own satisfaction at least, it should be recognized as soon as possible. Remember, there is no disease affecting this set of organs, which is more common.

Too often the diagnosis is made in a general way and the character of the disease not understood, and we speak of our patient as having albuminuria or Brights disease, without appreciating the true conditions. It may be of interest, if at this time I make reference to 250 general autopsies performed by me in the last two or three years. In a large percentage, perhaps 80 per cent. of these cases, death was due to violence and usually among persons in apparently good health and of middle life.

Six cases showed conclusively from macroscopical and microscopical appearances, that death was due to this disease, directly. In five others although death was due to some form of violence, yet the kidneys gave microscopical and macroscopical evidence of this disease.

In connection with the statement made, that the true condition is too often overlooked, I refer again to the Health Report of the District for the last five years. Brights disease, 243; Nephritis, 665; Uræmia, 92; Albuminuria, 17; Waxy kidney, 1; Undefined Kid. Dis., 1; Cirrhosis, 9; Cystic degeneration; Total, 1039.

In only nine were the conditions positively stated and six of these are referred to above.

The general symptoms are malaise, restlessness, deranged digestion, increased quantity of light colored urine, epistaxis, cephalalgia, deranged vision (with or without persistent cephalalgia). In many cases of sudden death attributed to "apoplexy" and "heart disease," this condition will be found to be the cause.

1. Urine.—Increased quantity from 70-120 ounces. Patients often notice this as first evidence of any disease. Specific gravity is low, 1,005-1,010.

Urea, diminished.—Trace of albumen with perhaps a few hyaline casts. The quantity of albumin depends upon the stage of the disease; so long as compensatory cardiac hypertrophy exists, it occurs in small quantity. We may at times notice that the urine is diminished markedly, this is no doubt due to an attack of contraction in the renal capillaries. The polyuria is of course due to the increased arterial pressure in the glomeruli in connection with the cardiac hypertrophy.

2. Heart and Circulatory System.—Sooner or later, we have left ventricle hypertrophy. The patient may complain of palpitation, due to increasd heartbeat, as a rule, however, it is first recognized by the physician in his examination.

Dyspnoea, etc., follow as soon as hypertrophy begins to give way and we then have all the symptoms of chronic disease of the heart. In weak, cachectic persons, dilatation of the ventricle occurs at once, in place of the preferred hypertrophy. On palpation we note increased and forcible apex beat, high arterial tension noted at the same time in all the vessels especially the radials. Hard, resistent pulse. This high tension is responsible for the epistaxis, which is often an early symptom, or the cephalalgia.

Persistent high tension pulse is one of the most important and earliest symytoms. At this time there will be noted a marked accentuation of the aortic second sound. Finally the hypertrophy as above stated gives way and we have the "gallop rhythm" and the other symptoms of chronic heart disease.

3. Cerebral—Headache, sleeplessness. The former severe and constant. Muscular twitchings or convulsions. Hemiplegia with or without aphasia, if so, it is sudden, accompanied with coma. In these cases we find evidence of endarteritis in the vessels of the brain.

Neuro—retinitis or nephritic retinitis may be present, such a condition is more common in this type of disease than any other. After cerebral hyperemia we have more or less stasis, anemia, the headaches become worse, disposition to sleep, etc., and at times vertigo. Finally symptoms of uraemia appear.

4. Skin.—Dropsy absent so long as heart can do its part. When it occurs,

usually seen first under the eyes or at the ankles. Skin dry and patient pale, although the cachexia is not as well marked as in other forms of disease of the organ. Sweat may contain urea. Eczema or general pruritus sometimes present.

Digestive Tract.—Dyspepsia complained of early, easily overlooked, however. Late in the disease it is severe, and even uncontrollable vomiting appears.

Tongue as a rule heavily coated with uriniferous odor to breath. An intestinal crisis is often seen, characterized by persistent and severe diarrhœa.

The symptoms affecting the respiratory organs and special senses, can easily be appreciated, without my going fully into them, from the above.

Not having the time, I shall not discuss the different types and different courses taken by the disease.

Diagnosis.—Cannot be recognized with certainty unless urine is carefully watched. We must pay more atttention to such examinations, do not lose sight of the fact that the disease is most insidious. In such an examination, be sure and see that the total quantity is carefully measured. When we find indefinite subjective symptoms, always examine urine. Polyuria, clear urine, low specific gravity, trace of albumen, tense pulse, hypertrophy of left ventricle, cephalalgia, abnormalities of vision, dyspeptic disturbances. This line of symptoms, should make us satisfied of a correct diagnosis..

Prognosis.—Long life, with comparative absence of annoying symptoms, may be expected, so long as the extra work is done, at the least expenditure of energy. The disease, as Osler says, is as "incurable as wrinkled skin or gray hair." We cannot expect to remove the connective tissue new growth or to cure the arterial involvement. We can, however, by careful observation detect the disease, perhaps early and by careful management, promise our patient a comparatively comfortable and at times useful life.

Treatment.—The chief object of this paper is the recognition of the disease and its anatomical appearances, so I shall merely mention a few points in connection with the treatment.

1. Guard against any irritation of the kidneys.

2. Relieve the work of the heart, in order to aid the compensatory hypertrophy and thus prevent cardiac insufficiency.

Hygienic, dietetic and climatic indications should be properly met and regulated. Over exertion, mental or physical, must be restricted.

Sugars, starches, wines, spirits and tobacco, must be strictly prohibited. In certain cases meats also, never more than once daily. Milk and fats are indicated, butter-milk especially beneficial. There is no objection to tea and coffee in moderation. Mineral waters are beneficial by merely flushing out the system, but are no wise curative.

Warm, tepid baths daily, should be encouraged, in order to keep up the action of the skin.

Drugs.—High tension with low specific gravity and cardiac hypertrophy, call for iodide of potash. Be careful not to lower too suddenly this high arterial pressure. When polyuria is an annoying symptom, nux vomica with bromide of soda is beneficial.

When the asthmatic symptoms are most prominent, dilate the capillaries, by means of chloral hydrate, nitroglycerine and iodide of potash, and heart stimulants (digitalis, strophanthus or caffeine). In severe cases apomorphia, nitroglycerine

must be promptly administered hypodermatically.

If anæmia is marked, preparations of iron, Tr. perchloride, in one half to one ounce doses, t. i. d., gives the best results.

Later when compensatory hypertrophy is waning, cardiac stimulants are absolutely necessary. Strychnia at this time accomplishes much good. When restlessness and delirum present, morphia is not only indicated, but is demanded.

Osler says that its effect at this time is most beneficial, without bad effect.

One ounce infusion of digitalis to 20 ounces of water, in which cloths have been wrung, applied to abdomen, acts as a diuretic. Inhalations of the fumes of juniper is also recommended, 30 minims on a sponge and dipped in hot water being inhaled.

The following short history of a case, may be of interest in connection with this paper.

Case.—Mrs. M., white, age 55, married, mother of several children, always in good health, until stricken with hemiplegia in March, 1897. Diagnosed as cerebral hemorrhage and after 2 months treatment and sojourn in the country during the summer, was much benefited by the Fall of 1897, recovering use of arm and leg, did not gain in weight or strength. In January, 1898, began to complain of dyspepsia, which gradually became much worse, presenting symptoms of a severe gastro-enteritis (gastric crisis) diarrhœa most obstinate, beyond the effect of any medicaments. Nausea and vomiting also present. Examinations of urine, showed the absence of albumin and sugar, specific gravity 1016 1022. Pulse was slow, hard, unyielding in character.

There was no anasarca. Later in disease urine markedly increased in quantity, pale and low-specific gravity, no albumin. Emaciation and anæmia increased rapidly towards the last, patient never complained of pain. Death occurred in April, 1898, apparently from asthenia.

Partial necropsy was allowed and performed by me April 10th 1898. Body badly emaciated, all membranes and organs markedly anæmic. Lungs, somewhat distended, hypostatic congestion. Blood dark venous and clotted.

Heart enlarged, weight 14 ounces, left ventricle distended and walls thinned, aortic valves calcareous, fibrinous clot in left ventricle, nothing else of note in this organ. Stomach anæmic otherwise normal. Small intestine, slightly injected above coecum coli. Kidneys, average weight 2 ounces, capsule firmly atached and when forcibly removed tears structure of the organ, granular and rough, dirty white color. Several small cysts, on each kidney. On section appears much hardened and tough; cortex thinned and fibrous appearance. Bladder, empty. Was not allowed to open skull.

Microscopical section of kidneys presented the following appearances. Both kidneys present same lesions. Marked interstitial increase with destruction of secreting tubules, many of these dilated and filled with albuminous exudate. Many glomeruli, converted into dense connective tissue. Atrophy and fatty digeneration of secreting epithelium a marked feature.

Slight endarteritis but not marked.

Liver, weight 34 ounces, roughened, pale, fibrous to the cut. Spleen weight 2 ounces, firm and tough.

MEETING OF OCTOBER 5, 1898.

The President, Dr. S. C. Busey, in the Chair.

The following were elected to full membership:

Isabel Haslup, M. D. Howard University, 1897.

Maurice E. Miller, M. D. Jeff. Med. College, 1895.

Jesse Ramsburgh, M. D. Univ. of Virginia, 1895.

John C. Simpson, M. D. Univ. of Penn. 1882.

Victor E. Watkins, M. D. Georgetown University, 1892.

The Treasurer submitted his report for July, August and September:

Received $49.62 Disbursed $128.51.

Dr. Wm. Penn Compton presented the following specimen:

"Root of a Tooth removed from the Antrum."

Dr. James Kerr read the paper of the evening:

The Treatment of Colle's Fracture by Gordon's Splint.

Discussed by Drs. Hammond, Van Rensselaer, Hooe, Friedrich and Kerr.

The paper has not been received for publication.

MEETING OF OCTOBER 12, 1898.

The President, Dr. S. C. BUSEY, in the Chair.

MEMORIAL OF DR. GEORGE BYRD HARRISON.

During the annual recess of the Medical Society of the District of Columbia, while many of us were enjoying our summer holidays the hand of death claimed one of our most beloved and honored members—Dr. George Byrd Harrison of this city—who passed away at his summer home at Cape May, New Jersey, on the 19th day of July, 1898.

The following brief sketch of his life, prepared by the undersigned committee, appointed for the purpose by the President of the Medical Society of D. C., and the Resolutions appended thereto, are herewith respectfully reported to the Society for its approval.

Dr. Harrison was born at "Ampthill," Cumberland County, Virginia, August 30th 1844.

His father was William Byrd Harrison of "Brandon," James River, Virginia; and his mother Mary Randolph Harrison of "Clifton," Cumberland Co., Virginia.

In early life Dr. Harrison seems to have exhibited the same studious habits and love of books which was so striking a feature of his character in later years. His education began under private tutors at his home, "Upper Brandon," Virginia, and this method was continued until he was about fifteen years of age. At this time (1859), he entered old "William and Mary College," in Williamsburg, Va., where he studied with unusual diligence and success. Indeed so numerous were the subjects of study undertaken and so untiring and assiduous his devotion to their consideration, that he was not allowed to complete his college course, from the fear that over application would injure his health.

After a temporary suspension of his studies therefore, he entered "Washington College" (now "Washington and Lee College") in 1861.

Here again his college career was doomed to interruption. The cloud of war had cast its shadow over the country, and young Harrison, joined the Confederate Army in 1863, at the age of nineteen years.

At the end of the war he returned to his father's estate, "Upper Brandon" in Virginia, and engaged in farming operations, and at the same time began reading medicine.

Not however until after the death of his father and the sale of his home, did he enter the Medical School of the University of Virginia from which he graduated at the end of one year's study in 1879, an intellectual feat that but few

medical students accomplish at this notable Institution.

After taking his Medical Degree at the University of Virginia, he went to the City of New York, and availed himself of the clinical instructions at the "College of Physicians and Surgeons" and the "University of New York" and of the private courses under Drs. Wright, Knapp, Loomis, Hammond and others.

At length fully equipped for general practice, he returned to Washington in 1880, and settled down to begin life as a medical practitioner.

From the beginning to the end of his professional career, it may most truly be said that he left no duty unperformed and no obligation unfulfilled. In his relations with patients and with his fellow-practitioners, he was, of all things, the very soul of honor, ever willing to sacrifice his own interest for the benefit of others.

Uniting the scientific basis of medical knowledge obtained by his thorough medical education, with the assiduous reading and study of current medical literature, it is no wonder that he became a popular and successful practitioner.

Dr. Harrison was a liberal contributor to medical journals and a successful teacher of Pediatrics in the medical school of The Columbian University; he was a member of the Medical Association of the District of Columbia and served both as Vice-President and President of the latter organization. He was also a member of the "Washington Obstetrical and Gynecological Society and was for two years its President. He was one of the "Founders" of the "Medical and Surgical Society of Washington" and of the "Eastern Dispensary;" one of the Physicians to "Garfield Hospital;" a member of the "Staff" and of the Board of Directors of the "Central Dispensary and Emergency Hospital;" Senior Physician of the "Washington City Orphan Asylum" from 1882 until the time of his death; and one of the physicians to the "Epiphany Church Home." He was Professor of "Diseases of Children" in the Columbian University and a member of the Faculty of "The Washington Training School for Nurses," besides being Senior Examiner in the "Mutual Life" and "United States Life" Insurance Companies of New York.

In every relation of life Dr. Harrison was emphatically:

"A man resolved and steady to his trust,
Inflexible to ill and obstinately just."

On November 22d, 1876, Dr. Harrison married Jeannie L. Stone, daughter of (the late) Dr. Robert King and Margaret Ritchie Stone. He leaves one son and one daughter, both of whom have attained adult age.

His funeral took place from the Church of the Epiphany, Washington, D. C., July 22d, whence his remains were followed to Rock Creek Cemetery by a large number of the members of the Society.

Your Committee present the following Resolutions:

Resolved:—That this Society sincerely deplores the death of our esteemed fellow member—Dr. George Byrd Harrison—a man honored and beloved for his noble and generous character, his gentle and kindly disposition, and his humane and courageous spirit. Ending his earthly career in the prime of life, and at the summit of his professional usefulness, we, his comrades, heartily join with his sorrowing relatives in lamenting his untimely demise, and we hereby beg to extend to them our genuine sympathy and earnest condolence.

Resolved:—That a copy of the foregoing resolution be forwarded to Dr. Harrison's family.

A. F. A. King, M. D.
Chas. E. Hagner, M. D.
T. Morris Murray, M. D.
A. R. Shands, M. D.
Jos. Taber Johnson, M. D.

THE

NATIONAL MEDICAL REVIEW.

VOL. VIII. WASHINGTON, D. C., JANUARY, 1899. No. 8.

Original Articles.

APPENDICITIS VIEWED FROM A SURGICAL STANDPOINT.

BY JOSEPH PRICE, M. D.,
Philadelphia, Pa.

We are all interested in the mooted questions connected with our surgery. We do not turn with so much concern to settled principles and methods; those making up the bed rock of surgical science enter into all we do. It is where our ways part we are most attracted.

Up to within a very recent period there was a very considerable body of the profession who denied the existence of appendicitis as a distinct disease. A yet greater number denied that it was a surgical disease, and called in question the motives of men with professional consciences quite as clean as their own who operated for the cure of the disease. The contributions on the subject by a few good operators have been very valuable and done much to educate the profession along rational lines of treatment. If the fault-finders, the skeptical, those whose criticisms betray only ignorance and prejudice, would employ a little time at the operating tables of those men who operate for appendicitis in its varied forms, they would witness such clinical demonstration as would shatter their prejudices, and condemn as false and dangerous their preconceived opinions. The disease is so rapid in its work, the deaths are so numerous, that one with knowledge of these facts is always pained to learn of opposition founded purely upon ignorance. Many of us recall a very pertinent expression of Dr. Robert T. Morris, in discussing this subject before one of our societies. He referred to the derision and ridicule he provoked when he took the ground that the appendix vermiformis should be removed as soon as appendicitis is discovered, and that deaths from appendicitis are unnecessary if the patient is within reach of the surgeon. Dr. Morris doubtless recalls how he went around with both eyes blackened and bandaged for his temerity, looking, and doubtless, feeling as if he had been on a bee hunt and found bees.

Abdominal sections and post mortems have revealed to us the gravity and extent of appendix lesions and have determined the one safe treatment to be surgical. It is a great mistake to counsel non-operative interference because peritonitis and infection exist. Early in the history of the subject surgeons were afraid of adhesions and sepsis or infection, and but few even attempted to cleanse or drain a generally filthy peri-

toneal cavity. After many years of experience and observation of all forms of suppurative peritonitis I have no hesitation in stating that it is a curable disease. I have repeatedly washed out a thoroughly filthy and contaminated peritoneal cavity due to a gangrenous appendix, drained, and the patient made a speedy recovery. It is the gangrenous and virulent forms with general peritonitis that tax the best skill, all the resources of our surgery to save life. Baker Brown said: "It is peritonitis that beats us". Later Mr. Tait said: "Now we have beat peritonitis".

Suppurative forms of peritonitis are not necessarily fatal, the puerperal variety is the most difficult with which we have to contend, and yet these cases are saved in good numbers by direct methods, central incision, freeing all adhesions, thorough toilet and quite general drainage where it is needed. Appendicitis with obstruction due to adhesions and peritonitis is rarely relieved by lateral operation; by the median route all kinks and adhesions are released, and pus or filth pockets are cleansed. The lesions about the appendix and cæcum are as easily managed as by the lateral operation. It should be recognized that sepsis is hopeless for medicine—that the only hope lies in prompt surgery. Pus will form whether there be perforation or none. When to operate is not so much a question of time as of conditions. The early removal of an actively diseased appendix, before the pathological process has reached an advanced stage, puts an end to an active disease, which if permitted to go on kills quickly. If a radical cure is to be had, operate without delay: if an autopsy is desired, wait.

An eminent authority gives an instructive picture of the disease: "Irritating substance, catarrh of cæcum or appendix or both, dilatation of appendix primarily or following dilatation of cæcum, contents of bowel enter appendix, fluids are absorbed, solids are left, concretions are formed and act as mechanical causes of inflammation, ulceration upon which follows amelioration or relapse, perforation, sepsis more or less extensive, operation or death." Second picture: Irritation, catarrh of cæcum or appendix or both, gangrene, obliteration or ulceration, stricture of proximal end during healing of ulcers, distal end patulous, retention sac or cyst forms which inflames, which empties into cæcum, rectum, bladder, peritonel cavity, etc.; peritonitis arises, adhesive or local or universal; quiescent; recurrence; connective tissue becomes involved; omentum, intestines, etc. fixed by adhesions, and possible strangulation of omentum, intestines, etc.; knife, ligature, irrigation, drainage, must be used or death occurs. Foreign body, pressure, atrophy, necrosis of epithelium, ulceration, perforation, etc.: knife and its associates or death." These are pictures well worthy the careful study of all those who advocate delay.

I have the records of two cases of appendicitis in one of which the opening was through the lungs and in the other through the œsophagus. Dr. Hunter McGuire has reported a case in which the appendix was found floating in a puddle of pus. Several years ago there was an illustration in the British Medical Journal of a case of hepatic abscess with a large opening through the loin. You could see the liver, the kidney and the colon. The man lived twelve days and died of dysentery. In most cases that we see the small intestines are enormously distended and the pelvis is filled

with adherent knuckle of bowel. In these you often have obstruction. The use of a purgative before the adherent knuckles of intestine have been released is simple folly.

The mortality under medical treatment is large, there is no way of determining how large, there is no possibility of securing accurate statistics. Many die while the physician waits for signs of tumor or peritonitis. From the inception of the disease the physician and surgeon should act together. Removal ends the possibility of recurrence, whether the disease be slight or serious. The one important consideration in diagnosing any given case as an operative or non-operative case is that the disease kills. Early diagnosis is of the greatest importance both as to treatment and results. It may be difficult to diagnose the disease in the first twenty-four hours because of the presence of few symptoms.

Diagnosis by exclusion is the safe method. The symptoms which are rarely commensurate with the severity and gravity of the disease should be most carefully studied. Pain is unreliable and often misleading; it is often slight. Subjective pain is of little or no value. There are no special signs of perforation if it take place late, after adhesions have formed. If perforation occur late and the adhesions are imperfect we find shock. Shock more or less profound usually occurs where perforation happens early and suddenly, it is followed by chill, vomiting, etc. Chill and vomiting inconstantly accompany the initial pain. The fever varies, usually low, the pulse indicates severity and increase, it shows constitutional disturbance. By finger pressure the point of the greatest sensitiveness is located over the base of the appendix. Adhesions make appendicitis a local circumscribed disease. When they are absent a diffused mischief is the consequence, they set up new trouble. If not broken up they form about all surrounding structures, parietal peritoneum, omentum, intestine and vessels, they lead to strangulation of omentum, bowel, etc.

Many claimed recoveries from conservative treatment are not recoveries; so-called resolution is not possible while adhesions exist, and they are left in the great majority of cases of apparent recovery under medical treatment. As incident to the disease we frequently find multiple pus cavities, also ileocæcal abscesses; these are of grave consequence. Good surgery opens, cleans and drains wherever found. As expressed by Prof. Bridge: "Abscess, wherever it is, and however well it may appear to be sursounded by protecting plastic deposits is a lasting menace to life, so evidenced by its spontaneous opening into the abdominal cavity, the venous canals, the bladder and the chest cavity, as well as externally and into the intestinal canal."

Recovery in these cases through medical treatment is not nearly so frequent as claimed. In very many there is mistake in diagnosis: symptoms in other troubles, those having no connection with the appendix closely simulate those of appendicitis. However experienced and expert the clinician may be he cannot always make a differential diagnosis between medical and surgical cases. Where doubt exists the doubt should weigh in favor of the treatment which has in it the least element of risk and radically cures—that is surgery.

The little appendix is often innocent of the mischief of which it is accused, this notwithstanding it is not very difficult for the experienced surgeon to deter-

mine when the appendix is involved. Opium does in these cases what it does in others, masks symptoms. Its use in these cases is what it is in all others where surgery is a very probable contingency—bad. There should be something more than the suspicion of the existence of the disease. Surgery should not be resorted to upon a mere suspicion of surgical trouble; there should always be grounds of reasonable certainty, such as is possible with our advanced knowledge of abdominal troubles. Diagnosis is not so difficult; the trouble is usually well defined; pain, mild or severe, in the right iliac fossa is always present; tenderness, distension, fulness and infiltration wholly absent on the left side, except when some malignant mischief is developing in the lower bowel. The ancient nomenclature—typhlitis and perityphlitis and post-cæcal abscess are secondary or chronic conditions to appendicitis and should never result. The connection is simply that of extension, the appendicitis extending to surrounding bowel, more commonly involving the ileum. The slow and progressive cases of appendicitis are always dangerous, and operation should never be postponed because they are of slow and steady progress and easily relieved by medicine. A large number of the chronic cases are encouraged to go abroad by that class of physicians and surgeons who oppose operation, and they return ill, or have the operation done or die away from home from refusal or delay of surgical relief. Waiting for a second attack when it is so well known that the great number of deaths from the first attack is attributable primarily to delay in operating, cannot be justified. There should be no question of the propriety or expediency of searching for the appendix. The declaration: "This case is one with no appendix" and abandoning the search is not justified by present anatomical knowledge and surgical experience with this disease. It is expedient and it is duty to search for the appendix—it can and should be found in all cases, but little risk is incurred in intelligent and skillful search. It is something of reproach to the surgery of the operator not to find the organ guilty of the mischief he is operating to correct. Incomplete operations have been too common. Simple incisions and imperfect gauze drainage is a common method and is very frequently followed by fæcal fistula, prolonged slough and suppuration.

The appendix should be removed in every case, the operation made complete at any cost as in all intraperitoneal and pelvic operations. The law laid down by Mr. Tait that intrapelvic operations should be completed at any cost is just as good law in appendicitis as in bilateral suppuration of tubes and ovaries, in fact applies with more logical force, for in cases of tubal and ovarian disease the suppuration and adhesions are much more general and extensive. It is only in completed cases that we have perfect results. In appendicitis the suppuration is in the right iliac fossa, high up and easily dealt with, the adhesions are easily freed and the visceral lesions easily repaired. When localized or general peritonitis exists, the toilet should be complete and the drainage thorough, the freeing of omental and bowel adhesions should be complete in every operation, otherwise infection and other complications will result. Surgeons commonly seek the pus accumulations behind the cæcum but steer cautiously away from the peritoneal cavity, from

the pus and filth beneath the omentum and the adhesions of the ileum.

Operative details have been too complicated, that of transfixion is a dirty and infectious method. The simple passage of sutures through the dirty canal is unsurgical. Circular or mass tying and inversion is also unsurgical, incomplete and infectious, a large piece of the appendix remains and the inverted stump creates a septic dead space. The amputation method, cauterization of the stump or the application of carbolic acid is incomplete, dirty and dangerous, dangerous because incomplete and dirty. I practice and urge the practice of the complete method of extirpation in all cases. The method is very simple and very rapid. It simply consists in cutting out the appendix from the head of the cæcum with scissors. The operative steps are as follows: Tie artery by transfixion of the meso-appendix; circle the appendix with a knife one fourth of an inch from the cæcum; pass four or six sutures, two or three below and two or three above the appendix and tie the sutures; by this simple method all sutures are passed before opening the bowel, the risk of contamination of sutures and surrounding peritoneum is about nil. Tinkering of any character in these cases, as in all other virulent (purulent) troubles is never justifiable.

Recurrences are frequent, dangerous and complicating. As the general practitioner studies these cases in his practice, as his experience widens and he grows familiar with the symptoms and finds that great numbers of these cases die under medical treatment, he will drop his preconceived prejudices against operation and insist that his patient be given the one and certain chance of recovery. He will not delay, he will not waste time in apologies. There is nothing so intolerant of apologies and delay as a surgical disease. I will do this today and that tomorrow will answer in the routine work of the housemaid but will not serve as a principle of practice in surgery. I am conscious that very many good men will say: "He speaks only from a surgeon's standpoint and with a surgeon's voice." I do; when in all cases where genuine appendicitis exists the trouble is a surgical one. If appendicitis, operate. I have been doing this operation for some years with a nil mortality, speedy recoveries and a total absence of post operative complications.

THE NATIONAL MEDICAL REVIEW,

EDITED BY

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WITH THE CO-OPERATION OF

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Edwin B. Behrend, M. D.,

AND

THE MILITARY SURGEON,

A SUPPLEMENT,

UNDER THE CHARGE OF

Colonel WILLIAM H. FORWOOD, Assistant Surgeon-General U. S. Army.

OFFICE: 1408 Twenty-first Street, N. W.

WASHINGTON, D. C., JANUARY, 1899.

Notices and Reviews.

HISTOLOGY: NORMAL AND MORBID. By Edward K. Dunham, M. D. Lea Bros. & Co., New York and Philadelphia. 1898.

After a very interesting and instructive introductory chapter, Prof. Dunham divides his work into three parts. Normal histology is fully considered in nineteen chapters, commencing with the cell and concluding with the organs of the special senses. In the second part of the seventeenth chapter whilst discussing the testis he offers the opinion that the "reduction of the chromatin" has a probable bearing upon the problems of heredity. He believes that the fact of its occurrence is strongly confirmatory of the idea that the chromatin is the carrier of hereditary characteristics. Part second comprises histology of the morbid processes and in separate chapters are considered degenerations and infiltrations, atrophy, hypertrophy, and hyperplasia, metaplasia, structural changes due to and following damage, and an especially valuable consideration of tumors in the twenty-fifth chapter. The author is to be commended when he says it will promote clearness of conception if the term tumor is restricted to abnormal masses of tissue produced without obvious reason and performing no function of use to the organism. The third part is devoted to histological technique and contains all necessary instruction for the student.

THE PHONENDOSCOPE AND ITS PRACTICAL APPLICATION. By Aurelio Bianchi, M. D. Price, 50 cents. Geo. P. Pilling & Son, Philadelphia, 1898.

Chapters one, two, and three of this book are the English translations of lectures delivered by Prof. Bianchi, and it is the direct intention of the publishers that this book shall not be mistaken for the complete book on phonendoscopy in course of preparation. The work also contains translations of special articles by by Dr. F. Regnault of France, and Dr. M. Anastasiades of Greece.

SAUNDERS' POCKET MEDICAL FORMULARY. By Dr. William M. Powell. Philadelphia: W. B. Saunders, 1899. Price, $1.75 net.

Extensive revision and addition have been made to bring this fifth edition of this well-known formulary in line with the advances that have been made in therapeutics. A large number of new formulæ have been incorporated, whilst many of older date have been replaced by others of established worth. No part of the book has escaped scrutiny and it is certain to retain the popularity it has so long enjoyed.

THE MEDICAL NEWS POCKET FORMULARY FOR 1899. By Dr. E. Quin Thornton. Lea Bros. & Co., Philadelphia and New York. Price, $1.50 net.

The author claims that in preparing this little volume he has had no intention of replacing individual thought on the part of the practitioner, whose diagnosis of each case must govern the character, quantity, and combination of the remedies selected. The arrangement of the text has been planned to conduce to the greatest convenience. Attention has been paid to palatability and pharmaceutical elegance, yet without sacrifice of therapeutic efficacy.

BREITENBACH'S YEAR BOOK. Huebsch & Co., New York. 1899.

This is a physician's daily memorandum for 1899, which the M. J. Breitenbach Company have so courteously sent to many members of the medical profession. It will prove of daily use to every doctor and will serve to remind him constantly of the value of Gude's Pepto-Mangan.

THE PRACTICE OF OBSTETRICS. By American authors, edited by Prof. Charles Jewett, M. D.

It is the laudable purpose of Lea Bros. & Co., to give soon to the profession Jewett's Practice of Obstetrics, by American Authors. The time is opportune for such a production and a completely new work by acknowledged masters of all the subjects it comprises will be welcomed.

PROGRESSIVE MEDICINE. By Prof. H. A. Hare, M. D. Lea Bros. & Co., Philadelphia and New York. 1899.

It is announced by Lea Bros. & Co. that they will issue in March, 1899, a new annual which will be issued in four handsome octavo, cloth bound and richly illustrated volumes of about 400 pages each. To insure completeness of material and harmony of statement, each narrative will receive the careful supervision of Dr. Hare, whose reputation is everywhere acknowledged as ensuring practical utility in a high degree. With the appreciation of the self-evident utility of such a work, the publishers will ask only $10 for the four volumes.

LABORATORY GUIDE. Methods for the Examination of Urine for the Students of the Columbian Medical School. By E. A. de Schweinitz, Ph. D., M. D. Press of Norman Elliott, Washington, D. C., 1898.

The author of this pamplet makes no claim to originality, his material being simply carefully compiled from well-known authorities. As an adjunct to the lecture course, including appropriate demonstration, and as a handy book of reference for the laboratory novice it will be found of value. It may, however, be said, didactically speaking, that such a work is scarcely best calculated to present the subject in the most assimilable form, for no matter with what skill the items be collated, there is sure to be lacking that most important and pleasing connection between the topics so necessary for thorough comprehension and for the stimulation and sustaining of the student's interest.

A MANUAL OF VENEREAL DISEASES. By James R. Hayden, M. D. Lea Bros. & Co., Philadelphia, 1898.

This little volume gives in a clear and compact form a practical working knowledge of the three venereal diseases, gonorrhœa, chancroid, and syphilis, together with their complications and sequelæ. The text of this second edition has been thoroughly revised, thus bringing the subjects up to date. It is to be regretted that the author has not said a little more about the hypodermic treatment of syphilis, which, at the present time, is receiving so much attention especially from the Germans. A new chapter on the care and use of urethral instruments has been added as have also many new illustrations. This second edition of Dr. Hayden's work is an excellent epitome of the subjects treated.

Progress of Medicine.

GENERAL MEDICINE AND SURGERY.

UNDER THE CHARGE OF

EDWIN B. BEHREND, M. D.

A Case of Malta Fever in which the Diagnosis was Confirmed by Agglutination of the Micrococcus Melitensis.

A physician was taken ill in Ajaccio with a fever of long duration, irregular and remittent in character. Besides headache, emaciation, rheumatoid pains existed. The patient convalesced. Malaria, typhoid fever and tuberculosis were excluded. Months afterwards, the blood serum was tested with a culture of the micrococcus melitensis, which agglutinated in a dilution of 1:1000. The blood gave no reaction to typhoid cultures or other pathogenic bacteria. The above positive reaction left no doubt as to the nature of the original disease. Lancet, Jan. 22, 1898.

Dullness of the Pulmonary Percussion Note Without Pathological Change in the Lung.

The author has frequently observed cases of dullness of the percussion note over the apices without observing any change in the lung itself. This usually occurred in bedridden, marasmic individuals. The dullness occurred in both infra and supra clavicula regions, and was not to be distinguished from the dulness of tuberculosis. Auscultation was usually negative in these cases, except for diminished breath sounds. The dulness is usually on both sides in these cases. The dulness is due to the fact that these patients breathe superficially and that these portions of the lungs are only partially aerated. The condition is also associated with atrophy of the apex of lung. Kernig. Ueber Dämpfung des Perkussionschalles der Lungen Spitze ohne Pathologische Veränderungen derselben. Medic. Obosrenic, 1898, lxix, 2.

A Case of Acute Aspergillar Pseudo-Tuberculosis.

The occurrence of cases in practice which offer great difficulties in diagnosis and the unexpected nature of diseased processes as they are sometimes found, is illustrated by the report of the above case. A young man entered the clinic of Professor Kalinders, suffering with symptoms which led to the clinical diagnosis of typhoid fever. He died at the end of three weeks with all the signs of an acute tubercular affection of the lungs. At the postmortem pleural covering was thickened, many adhesions were found at the apices of the lungs. In the upper lobes areas of caseation were found of grayish yellow color, from the size of a small pea to that of a bean. In the centre the areas had undergone purulent softening. The cheesy masses were made up of pale embryonic tissue, which is mingled with fibrinous exudate. The lymphatics are filled with leucocytes and exudate. In the centre of each caseous mass was found a fungus with mycelium-like ramifications which had all the appearances and characteristics of aspergillus fumigatus. Kalinders. Ueber einen Fall von akuter aspergillarer Pseudo-tuberculose. Med. Chir. Centralbl., Wien, 1898, xxxiii, No. 41.

Carbohydrates and Tissue Albumin in Diabetes.

From the results of some careful analyses made in three cases of diabetes, the author reaches the following conclusions. There are individual cases of diabetes in which the body is unable to assimilate carbohydrates either in part or completely. In such cases the saving of tissue albumin by the exhibition of car-

bohydrates, as first reported by Leo, is not to be observed. A marked loss of albuminous tissue, which occurs when carbohydrates are taken out of the diet, is to be explained by continued excretion of large amounts of sugar which must be covered by the breaking down of a larger amount of tissue albumin. In such cases of grave diabetes with failure to assimilate carbohydrates, these latter must be avoided, especially when the excretion of sugar is greater than the amount to be desired from the carbohydrates ingested. Rumpf, (Th.) Ueber die Assimilationsgrösse und den Eiweis Umsatz bei Diabetes Mellitus. Berl. klin. Wchnschr. Oct. 24, 1898, No. 43, 945.

The Amœbæ of Dysentery and Enteritis.

In 15 cases of dysentery, partly originating in the tropics and partly in Germany, amœbæ were found constantly in the stools. As a rule they presented active movements, which were affected by the temperature and conditions of examination. With the exception of two cases, all the stools contained red blood corpuscles. In the two cases in which they were not found, they did not appear even when the passages were diarrhœic. The author is of the opinion that the amœbæ are not the causative factors in the disease, since there appear to be no characteristic differences between the amœbæ of tropical dysentery and those of the endemic (German) form of catarrhal enteritis. The formation of cysts as observed by Quincke and Roosh the author did not observe. The cystic forms are believed to be the most important marks of difference between the true and pseudo-dysenteric forms. The author concludes that amœbæ in the intestines are harmless parasites, and that the catarrhal conditions, with abundant mucous secretion, offer the best nutrient media for their growth. Of interest was the occurrence of large Charcot-Leyden crystals in the dysenteric passages, together with coarse granular eosinophilic round cells. Römer (F.) Amöben bei Dysenterie und Enteritis. Münch. med. Wchnschr., 1898, No. 2.

CLINICAL DIAGNOSIS.

UNDER THE CHARGE OF

ANDREW STEWART, A. M., Ph. D.

Determination of the Specific Gravity and Hæmoglobin of the Blood.

To avoid the errors and inconvenience incident to the method of determining the sp. gr., and from that the percentage of hæmoglobin of the blood to wit: variation in sp. gr. of the two solutions heretofore used due to temperature, and the adherence of the blood drop to the sp. gr. cylinder, on the one hand; and the necessity for a comparatively large amount of blood and of liquids, and for carrying and consulting a table of hæmoglobin percentages, on the other, Dr. Krauss has devised a new method. He has constructed a volume pipette and graduated it in hæmoglobin percentages; he uses two fluids, one of sp. gr. 1.000 at 60° F., colored with gentian violet, the other of sp. g. 1.060 at 60° F., uncolored, which will float blood containing 110 per cent hæmoglobin. The error due to changes of temperature is slight and can be disregarded. The pipette holds 5 cc at the 110 per cent mark. Measure 5 cc of the colorless, heavy, liquid into a test tube and float upon it a drop of blood. The pipette filled with the lighter, gentian violet liquid is then introduced to the bottom of the tube and allowed to slowly discharge its contents, which may be seen to rise and diffuse themselves in the colorless medium.

The blood drop recedes from the surface, and when the proper sp. gr. has been reached, the percentage of hemoglobin is read off on the pipette. The instrument has been tested and found accurate. Krauss, Wm. A simple method of estimating the sp. gr. and hæmoglobin percentage of the blood. Tr. M. Soc. Tenn., Nashville, 1898, 188-194.

The Oppler-Boas Bacillus and Gastric Carcinoma.

The diagnosis of carcinoma of the stomach, before the appearance of a tumor, is demanded, if more than mere temporary relief of the patient is to be achieved. The microscope affords the means to this end. The Oppler-Boas bacillus, which may be found in the gastric contents, has of late attracted much attention. This is a bacterium first described by Oppler, in 1895, under the name of Fadenbacillus (threadlike bacillus). It is of unusual length, nonmotile and individuals may be seen lying end to end in long, thread-like chains, or at right angles to each other. It stains readily and does not appear in the presence of hydrochloric acid, preferring a lactic acid medium. To it has been attributed the property of forming lactic acid from sugar. Riegel confirms the presence of these bacilli in enormous numbers in cases of gastric carcinoma, although he does not consider them pathognomonic of the disease, he still regards their presence of great diagnostic significance. This opinion is shared by other eminent authorities, such as Hemmeter, Stockton, etc. Sarcinæ and Oppler-Boas bacilli have not been found existing for any length of time together in carcinomatous stomachs. With the disappearance of hydrochloric and the appearance of lactic acid, the sarcinæ vanish and are replaced by the Oppler-Boas bacilli. Oppler administered sarcinæ in pure culture for several days, in certain cases of carcinoma, but was unable to find them, 24 hours after the last ingestion, in the stomach contents. Kaufmann reports that in 20 cases of carcinoma the Oppler-Boas bacillus was found in 19, while in the 20th case no lactic acid was discovered. Hemmeter reports the presence of the bacillus in the stomach of 14 out of 16 cases, and Ullmann, of Buffalo, found it in all of 10 cases. In conclusion the writer of this paper says:

"1. That, while not pathognomonic of carcinoma, the presence of the Oppler-Boas bacilli is of the utmost diagnostic value.

"2. That their presence may be demonstrated in nearly all cases at some stage of the disease.

"3. That in a large number of cases the baccill may be found before the tumor has involved surrounding structures to such an extent as to make extirpation impracticable.

"4. That in a limited number of cases the baccilli may be found before palpable evidences of tumor." Knickerbocker, H. J. The Oppler-Boas bacillus in the diagnosis of gastric carcinoma. Phil. Med. J., 1898, ii, 1084.

Testing for Albumin in the Urine.

The so-called "Domestic Test" of Truax has been recommended on the ground of great convenience, and delicacy equal to the other and well known methods. It is best performed by introducing about a drachm of 95 per cent alcohol into a test tube and pouring into this two or three drops of the suspected urine, when, in the presence of albumin, a cloud forms. In point of convenience and delicacy of its reaction the test leaves nothing to be desired; it is, however, unfortunately, not trustworthy, as is proved by Ludlow as follows: He employed it in 150 examinations on specimens of the urine of 95 supposedly healthy persons and controlled his results by standard methods. A well marked reaction was observed in 76 experiments, or 50.6 per cent, and in less degree in 43, or 28 7 per cent. Not at all in 31 or 20.7 per cent. But in 83 of the examinations, where the alcohol test proved positive, no reaction responded to the standard tests. The rest of the specimens were either albuminous, or the alcohol test was also negative. It was found that there was a certain relation existing between the positive reaction of the alcohol and high color and

concentration of the urine. A urine of sp. gr. 1.018 yielded no result with alcohol, while with nitric acid a faint haze resulted above the line of contact, showing excess of urates. The urine was evaporated to 1.036. Still acid, all serum albumin should have been coagulated. Heller's test and heat and nitric acid showed no reaction, but the alcohol reaction was strongly positive. On diluting the urine, it was again negative. In a specimen of urine distinctly pigmented by blood and giving the usual reaction with nitric acid no reaction was obtained with alcohol. It was proved that precipitates due to alcohol were not mucin nor peptone. In specimens where a positive result was obtained with alcohol no reaction resulted from the employment of even sodium tungstate, which is known to precipitate several sorts of proteids. The reaction with alcohol is not constant in the urine of one and the same person from day to day. There seems some connection between it and excess of urea. In general, the writer strongly advocates the employment of the Nitric-Magnesian test of Roberts, for albumin, as he has found it to exceed the nitric acid and nitric acid and heat tests in delicacy and promptness, and as it gives a more compact ring. In technique it is the same as Heller's test. The test solution is prepared by mixing one part of pure nitric acid with five parts of a saturated, filtered solution of magnesium sulphate. In speaking of the errors incident to the contact method of testing, the writer says:

"Mucin also slowly produces a haze above the line of contact, because it is not precipitated by strong nitric acid, but only by that acid when highly diluted. If additional confirmation of the presence of mucin is desired, it can be obtained by substituting for the nitric acid a saturated solution of citric acid. This gives with mucin an opalescent zone immediately above the layer of acid. The presence of oleo-resins will usually be indicated by the odor imparted to the urine, but they may be definitely distinguished from albumin by the fact that the precipitate is readily soluble in alcohol.

On one occasion only has the writer observed a reaction resembling that produced by albumin, yet due to another cause than those already detailed. In this case the urine was slightly alkaline, and as it came in contact with the acid a ring was formed at the line of contact which might have been mistaken by a superficial observer for a ring of albumin, especially if the tube had not been examined a second time after the lapse of some minutes. On close inspection it was found that the ring was made up of myriads of tiny bubbles of carbonic-acid gas, and the phenomenon disappeared as soon as the evolution of gas ceased. I have never observed this in connection with other specimens of alkaline urine, nor have I seen it mentioned in the literature." Ludlow, Ogden C.—A fallacious test for albumin in the urine, with remarks on the best tests. Med. Rec., N. Y., 1899, 55, 3.

Test For Iodoform Intoxication.

The following means (Buffalo Medical and Surgical Journal) may be resorted to for demonstrating in time a threatened iodoform intoxication, a condition which is not rare in surgical and gynecological practice. A test is made of the urine to note the quantity of iodine which is eliminated by it. A small pinch of powdered calomel is placed upon a white saucer, and then a few drops of the urine to be examined are dropped upon it; a mixture of urine and calomel is then made with a glass rod. If the urine contains a notable amount of iodine there is produced a well-marked yellow discoloration, which should indicate that the iodoform is being absorbed in sufficient quantity to produce danger. Rev'd. in Amer. J. Surg. and Gyn., 1898, xi, 119.

Examination of Urine and the Diagnosis of Cystitis.

Dr. Jno. A. Wesener, in a paper read before the Chicago Gyn. Soc., Nov. 19, 1898, entitled "Chemic and Microscopic Examination of the Urine, with Special Reference to the Diagnosis of Cystitis,"

said that very little had been done on the microscopic and chemic examination of the urine in cases of cystitis. It is true, we are told to differentiate cystitis from pyelitis by the character of the epithelium present. In the case of females, in whom cystitis is suspected, the urine should be obtained by the catheter. If this rule be followed, it will avoid the possibilities of contamination from vagina. Cystitic urine may be either acid or alkaline. If the infection is by the bacillus coli, it is acid ; if in addition it becomes infected with the bacillus vulgaris, it becomes alkaline. Of 200 cystitic urines examined, 68 per cent. were acid and 21 per cent. alkaline. Of the alkaline urines found, decomposition took place in some after voiding. The reaction of the urine no doubt depends on the character of the bacteria present. The works of Rotoski, Krogins and Müller justify the above assertion. Müller found cystitic urine acid in 75 per cent. of all cases examined by him ; while Melchoir showed from an analysis of sixty-two cases, that ammoniac decomposition is only a subordinate circumstance in cystitis, depending solely on the microbe present. The most important of these is proteus vulgaris.

To differentiate cystitis from pyelitis, Dr. Wesener proceeds as follows ; In cystitis there is always more pus than in pyelitis, and for this reason kidney epithelium is found more readily in pyelitis because of the smaller amount of pus present. After centrifuging the urine, it should be tested for the amount of albumin it contains. In cystitis it is found absent or present, depending on the amouut of pus ; whereas, in pyelitis, a considerable amount of albumin is always found. The explanation for this difference is due to the fact that the kidney is a much more vascular organ than the bladder ; therefore, exudation takes place more easily. Red-blood cells are found more frequently in pyelitis than in cystitis. In pyelitis casts are often found. Clinically, we might succeed in distinguishing these two conditions by washing out the bladder with sterilized water immediately after urination ; examine the urine collected, and also the washings for pus. If the water contains a considerable amount of pus, it is probably cystitis. J. Am. Med. Assoc., 1898, xxxi, 1477.

The Germicidal Properties of Alcohol.

In view of the widely spread erroneous ideas about the antiseptic power of ethyl-alcohol, it may not be amiss to recapitulate the results of some very careful and ingenious investigations. It may only be remarked as a foot-note, that these conclusions are in accord with previous investigations made by Koch, and especialty by Kroenig and Paul.

1. The bactericidal power of ethyl-alcohol is generally very slight. At ordinary temperature it is able to destroy non-sporogenous micro-organisms, but not the sporogenous ones. Its action is much more pronounced in medium concentrations (50—70 per cent.) than in lower or higher ones ; it is almost nil in absolute alcohol.

2. Boiling alcohol, or alcohol heated under pressure, acts in the same degree bactericidal as the percentage of water contained in it is increased.

3. The antiseptic substances dissolved in alcohol lose considerably of their power as compared with aqueous solutions. The bactericidal action of alcohol solutions varies inversely with the concentration of the alcohol. Minervini, R. —Ueber die bactericide Wirking das Alkohols. Zeitschr. f. Hygiene is Infektionskr., 1898, xxix, Hft. 1. (Rvd. in St. Louis Med. Gaz.

BIOCHEMISTRY IN RELATION TO MEDICINE AND HYGIENE.

UNDER THE CHARGE OF
E. A. DE SCHWEINITZ, Ph. D., M. D.
Director Biochemic Laboratory, B. A. I., Agricultural Department.

Organismal Contents of the Lungs.

Barthel submits Dürck's statement that the healthly human lung is rich in bacteria, and comes to the following conclusions: The air vesicles are free of organisms. The trachea and the bronchi of moderate calibre exhibit upon their surface both pathogenic and non-pathogenic organisms. As compared with the flora of the mouth and fauces there are more pathogenic organisms in the trachea and bronchi. This difference, in proportion, may be due to the multiplication within the bronchi of the pathogenic varieties which are known to grow better at the temperature of the body than the merely saprophytic ones, and also to the excretion of these organisms during disease into the bronchi from out of the blood stream or lymphatics, an event, the possibility of which, has been domonstrated. These organisms tend to be removed by the ciliated epithelium and to be rendered inert by freshly secreted mucus. But if the epithelium or the mucus follicles are in any way injured the bacilli gain entrance into the substance of the lung. The diplococcus lanceolatus appears to be more often present than all other varieties and to be one of the most virulent. Barthel. Centralbl. f. Bakt., 24; 11-12.

Serum Diagnosis in Typhoid Infection.

The author has reviewed very carefully the work of Courmount and claims that in cases of typhoid fever a high fever and a low agglutinating power of the serum is a bad indication while a low fever and high agglutinating power is a good one. His investigations do not corroborate the statements of Courmount, and while he concludes that the degree of agglutination appears to be closely related to the resisting power of organism, he does not think that any safe prognostic conclusions can be drawn from the comparison of temperature and charts in their relations to the degree of agglutinating power. Tarchetts. Gazz. degle Osped. e delle Clin. Nov. 6, 1898.

Tubercle Bacilli in Butter and Cheese.

Continuing the work upon the examination of butter for tubercle bacilli, which they found to be present in various samples, the authors have also examined cheese. Inoculations were made from fifteen different samples of the same sort of cheese. In three cases the animals died from tuberculosis, and tubercle bacilli were found. This would indicate that tubercle bacilli may be found even in sour milk and under certain condition may remain in a variety of cheese samples for a considerable time. Weitere Mittheilungen über Befunde in Butter und Käse. Hormann und Morgenroth. Hygien. Rundsch., Vol. 8, No. 22, Nov. 15, 1898.

The Duration of the Toxic and Antitoxic Power of the Toxin and Antitoxin of Diphtheria.

The investigations of the author have shown that the diphtheria toxin retains its toxic power during more than two years with only a very little degree of loss. It would be necessary, therefore, when one wishes to determine the antitoxic power of a serum, to find the fatal dose of the toxin. The antitoxin serum also preserves its qualities for a very long time, and has been found to have decreased in value but little after several years. It resists for quite a time the action of light and increase of temperature. Abba. Sur la Durée du Pouvoir Toxique et Antitoxique de la Toxin et de l' Antitoxine Diphthérétiques. Centralbl. f. Bakt., 23: 934.

The Neutralizing Action of the Hydrochlorate of Betaine upon the Toxin of Tetanus.

The authors have found that the chloride of bétaïne, a substance which can be extracted from sugar beets, exerts a neutralizing action upon the toxin of tetanus. It is not possible however, to give unlimited doses of this bétaïne chloride as more than 12 to 15 centigrams is fatal to a guinea-pig weighing about 350 grams. H. Roger & O. Josué. Action neutralisante du chlorohydrate de bétaïne sur la toxin tétanique. Compt. rend. Soc. d. Biol., v, No. 37.

The Action of Kresol as a Disinfectant.

The author made a study of the action of kresols used as disinfectants and comes to the conclusion that the action of phenols and kresols is due to direct chemical combination between them and the substance upon which they are allowed to act. This action takes place more readily upon dead matter than upon live cells, but their action is a direct chemical one upon live cells, their secretions and also the dead cell matter with which the disinfectants come in contact. Zur Kenntnis der Wirkung von Kresolen bei deren Verwendung zur Desinfection. C. B. Schürmayer. Arch. f. Hygiene, 34, Hft. 1.

The Bactericidal Action of Metals.

The authors have made a study of the bactericidal action of metals and come to the conclusion that this action is due to the solution of the metals in the culture media, and consequently the amount of these salts that are formed determine the extent of the bactericidal effect. While silver, mercury, copper exert a bactericidal action, other metals so far examined—magnesium, albuminium, iron, zinc, lead, tin, palladium, platinum and gold are inactive. The bactericidal action of silver can be increased by uniting with more electro-inactive metals and making it the negative in a culture fluid. The action here again is due to the fact that the silver is dissolved. If the silver is united to copper or metals that are only slightly more positive than itself its bactericidal action is lost. Ueber die Bacterien schädigenden Einwirkungen der Metalle. Herman Thiele and Kurk Wolf. Arch. f. Hygiene, 34, Hft. 1.

The Regeneration of Antitoxin Substance.

The authors have made some experiments to see to what extent the antitoxin will be regenerated in the blood after the animals have been bled. They found that after the first two bleedings the production of the antitoxin showed a diminution directly proportional to the blood drawn. Another experiment showed that the blood drawn from an animal two months after it has received the last injection of toxin had not lost in antitoxic property. It would appear therefore that under the influence of the toxin certain of the animal cells had acquired a new persistent secretory property for the production of antitoxin. Sur la Reproduction de la Substance Antitoxique. Carl Salomonsen et Thorvald Madsen. Ann. d. l' Inst. Pasteur, 12, No. 11, Nov. 25, 1898.

The Transmission of Tuberculosis from Mammals to Fowls.

The authors have succeeded in transmitting animal tuberculosis to chickens by giving them first an injection of serum from a horse and subsequently injecting them with glycerine tuberculosis culture. They found out of 19 chickens inoculated under these conditions, 16 contracted tuberculosis. Sur un Procéde Permettant de Transmettre la Tuberculose des Mammiferes aux Gallinaces. Cadiot, Gilbert et Roger. Comp., Rend. Soc. d. Biol., Vol. 5, No. 36, Nov. 25, 1898.

Certain Conditions Which Modify the Action of the Liver Upon Microbes.

The author has made some studies upon the conditions which modify the action of the liver in destroying bacteria. After a number of experiments he comes to the conclusion that ether, if given in small amounts, increases the destructive power of the liver for bacteria, while if larger quantities are taken in, this power is diminished. De Quelques Conditions qui Modifient L'Action du Foie sur les Microbes. M. Roger. Compt. Rend. Soc. d. Biol., Vol. 5, No. 31, Oct. 21, 1898.

Therapeutic Notes.

Right of Selection.

Not only has the doctor the right of selection of the drugs with which he desires his prescription to be compounded, but he has also the right to dictate to the pharmacist the manufacturer whose preparation he wishes to use and it is criminal on the part of the druggist to employ any other preparation than the one called for by the prescription. This statement may be emphasized by a quotation from the recent edition of Hare's Therapeutics. Writing of Cannabis Indica, Hare says: "The employment of this valuable remedy is handicapped by its frequent lack of power—a fault which is largely dependent upon its preparation. The drug as prepared by Parke, Davis & Co., has proved efficacious in the author's hands for a number of years." The physician should specify in his prescription whose preparation of a drug he desires and should insist upon having that one and no other.

A Desirable Antiseptic.

The Sanitarian says as a deodorant and antiseptic for the sick room and for the dentist's office, Listerine stands pre-eminent. While it is equal to any and superior to most of the agents commonly used under such circumstances, it adds an agreeable aroma instead of an offensive odor to the surroundings; and is particularly well-adapted to the lying-in room. It may be freely used in spray or lotion without stain or irritation as an agreeable and effectual detergent. It is also specially commendable in weak solution, as a mouth-wash and gargle for aphthous sores or a fungus condition of the gums, and bad breath; and for certain forms of indigestion—those accompanied by disagreeable eructations—a few drops of Listerine in water is a particularly grateful and excellent remedy. Moreover, according to a series of "Experiments upon the Strength of Antiseptics," by Dr. A. T. Cabot (Boston Medical and Surgical Journal), Listerine compares favorably with the most reliable agents for the rapid destruction of micro-organisms.

Seasonable Prescriptions.

Douche for Nasal Catarrh, Ozæna, etc.

R. Antikamnia and Codeine Tablets, No. xxiv.

Sig. Crush and dissolve six tablets in a pint of tepid water and use one-third as a douche three times a day. Shake well before using.

Snuff for Acute Coryza, Rhinitis, etc.

R. Acidi Borici Pulv., gr. lx.
Acidi Salicylici, gr. vi.
Antikamnia (Genuine), gr. lx.
Bismuth Sub. Nit., gr. cxx.

Mx. Sig. Use as snuff every one, two or three hours, as required.

Catarrhal Conditions.

La Grippe has prevailed to such a great extent of late that scarcely a home in Washington has escaped without one or more cases. Coughs and catarrhal conditions will be prevalent during the remainder of the winter unless proper remedies and precautions are adopted. The medical profession is well informed as to the virtues of Firnol. It is especially useful in all catarrhal conditions of the air passages. Two atomizers in one box generally go with a bottle of Firnol, one, dark colored, for Firnol Compound, the other, for any cleansing solution.

To Relieve Inflammation.

Dr. A. L. Stiers, Dawson, Neb., writes to Battle & Co., as follows: Sample of Ecthol was received and at time of receiving had good case to use it. Miss —— had misfortune to run hedge thorn one inch long in leg above ankle. It remained in one week when she was brought to office to have it extracted. Was successful in removing thorn but it it being a dead one pieces of bark remained in wound. Disinfected wound with bi-chloride, bound it up and sent patient home. Was summoned in two days and found limb inflamed to groin, swollen and very painful. Removed

bandage which was followed by small quantity of pus. Re-applied dressing. That night bottle of Ecthol was received, visited patient next day, and put her on Ecthol, teaspoonful six times a day and injected medicine in the wound and applied cloth saturated with same. In four days pain, swelling and inflammation gone, wound healing and patient able to do her work.

An Efficient Hemotherapy.

The treatment of anæmic conditions with iron preparations is sometimes rendered difficult by the presence of disturbances of the digestive functions. Anæmic persons are commonly sufferers from dyspepsia and constipation, and it is for this reason that it is often so difficult to select a chalybeate remedy which will be well tolerated, and will not increase the existing gastric and intestinal disorders. In ferro-somatose the physician has an iron preparation which is intended to overcome these obstacles to an efficient hemotherapy. It consists of the albumins of meat converted by a special process into albumoses and combined intimately with a fixed proportion of iron ; in other words, it may be regarded both as a chalybeate tonic and food, for it not only serves to carry to the blood an adequate amount of the requisite iron, but also a large amount of highly assimilable nutriment. Owing to the fact that ferro-somatose is absorbed in its own form and requires no preliminary digestion, it is easy to understand why its administration is so rapidly followed by a gain in flesh and strength. And for the same reason—its immediate absorption without taxing the digestive organs—its use is entirely unattended with the objectionable features of other iron preparations which have been alluded to above.

An Important Factor.

Compressed air having become an important factor in up to date treatment of respiratory and aural affections, all practical improvements in air compressing apparatus are readily appreciated by every progressive physician. The Globe Manufacturing Company of Battle Creek, Mich., have devoted much time to this work, and have recently brought out a number of valuable improvements in Air Compressors, Receivers, etc.

Their new Automatic Pressure Regulator is being received with much favor. It can be attached to any Air Receiver, which may then be stored at high pressure which is automatically reduced to any desired extent to suit the work in hand, thus securing uniform results with an economical expenditure of air. This ingenious device is so arranged that at any time both the high and reduced pressure can be read from a single gauge.

The Globe Automatic Cut Off made by the same Company has many new and attractive features. If further information is desired, write the Manufacturers for circulars.

Get the Best.

MILWAUKEE, WIS., Dec. 12, 1898.
MALT-DIASTASE CO.,
No. 1 Madison Ave., New York.
GENTLEMEN :—

At your request I have made a study of Maltzyme, and believe that it possesses all the diastasic power claimed by you.

I obtained in the open market samples of Maltzyme with Cod Liver Oil, Trommer's Extract of Malt with Cod Liver Oil, and Maltine with Cod Liver Oil, and give you herewith the diastasic power of each of the preparations named :

Maltzyme with Cod Liver Oil, 4.611
Maltine with Cod Liver Oil, 1.631
Trommer's Extract of Malt with C. L. O. .384.

The figures indicate grammes of maltose and isomaltose produced by one gramme of the malt extracts used.

Very truly yours,
W. C. BENNETT.
Professor of Chemistry & Bacteriology, Wisconsin College of Physicians & Surgeons.

A Valuable Preparation.

J. K. Bauduy, M. D., L.L. D., Professor Nervous and Mental Diseases and of Medical Jurisprudence Mo. Med. College, writes of a valuable preparation in this manner: "This is to certify that I have for two years extensively used in my practice " Gude's Liq. Ferri Mangan Peptonat." I can honestly state that in a practice of thirty-three years in this city, I consider it the most valuable preparation of iron I have ever administered.

TRANSACTIONS OF THE MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA.

EDITING COMMITTEE:

W. W. JOHNSTON, M. D., GEO. M. KOBER, M. D., JAS. D. MORGAN, M. D.

MEETING OF OCTOBER 12, 1898. Dr. S. C. Busey, President, in the Chair.

(Continued.)

Resolutions in memory of Dr. John A. Drawbaugh.

Washington, D. C., Oct. 12, '98.

Whereas we have heard with profound sorrow of the death of Dr. John A. Drawbaugh a member of this Society at Asheville, N. C., May 27, 1898.

Resolved, that in the death of Dr. Drawbaugh the Society has lost one of its honored and faithful members, and his colleagues a loved, and valued friend.

Resolved, that we extend to his family our sincere sympathy in their sorrow.

Resolved, that these resolutions be spread on the minutes of the Medical Society, and a copy be sent the family of Dr. Drawbaugh.

L. L. FRIEDRICH, M. D.
C. W. FRANZONI, M. D.
D. O. LEECH, M. D.

Dr. Lamb presented the following specimens:

AORTIC INSUFFICIENCY.

Specimen of heart weighing 15 oz.; aortic and mitral valves much thickened, indurated and quite rigid; mitral opening admits one finger only; aortic valve covered with massive vegetations and in posterior sinus of Valsalva is an ulceration into the heart-substance forming an incipient dissecting aneurism. In the recent state the visceral pericardium showed abundant capillary hemorrhages. Coronary arteries atheromatous. From a negro man age 28 who had had dyspnœa for a year; had fever and chills in May 1898. September 9th, had cough and bloody sputa lasting several days with pain in right mammary region increased on exertion; no rise in temperature. Was losing flesh. Admitted to hospital September 13th, and died the 18th. The temperature was mainly subnormal; pulse 82 to 106; respirations 26 to 40. Had œdema of lower limbs; tenderness and dullness in right inframammary region. I made the post-mortem examination; found the body well nourished. Two circumscribed areas of hemorrhage into upper and middle lobes right lung; both pleuræ dull looking and rather dry. Passive congestion of liver, spleen and stomach; also cirrhosis of liver and enlargement of Malpighian bodies of spleen. Some interstitial nephritis.

APOPLEXY IN THE THALAMUS OPTICUS.

Two specimens; from the brain. Part of left side of cerebrum with pons and medulla; there is some contraction and a curved fissure in the thalamus and internal capsule with yellow pigmentation, showing the healing from an old hemorrhage. Also part of the anterior right cerebrum showing recent hemorrhage involving frontal lobe near its base, and some of the corpus striatum, mainly the lenticular nucleus, and part of the internal capsule, and extending well into the island of Reil. From a colored woman age 49 who had sudden right hemiplegia in January 1898; was in bed three weeks; and after six weeks seemed to have entirely recovered. She continued well till August 23d, when severe headache was complained of; 25th, paralysis of left arm noticed and unconsciousness. Admitted to hospital on 27th, and died on 29th. While in hospital her temperature rose to 103° and 104°, pulse 124, and respiration 30. I made the post-mortem examination and found the dura mater rather firmly adherent in places to the skull-cap; bony spicula and a small tumor in falx cerebri; old and recent hemorrhages as described; with softening and œdema around the recent lesion; marked atheroma of arteries at base of brain. There was some thickening of aortic valve; œdema of right lung; some congestion of liver; marked atrophy of spleen; fatty kidneys.

FRACTURE OF SESAMOID BONES IN A HORSE.

Specimen of sesamoid bones, suspensory ligament, etc., of horse; from left hind leg; shows tranverse fracture of both bones, laceration of ligament and infiltration of blood into surrounding soft parts. The lesion seemed to be due to intense spasmodic action, and all four limbs were involved in the same way. The horse was a draught horse about 7 years old which had been well and doing his work satisfactorily until one day while being driven as usual, he suddenly screamed and fell. With great difficulty he got on his feet again and it was seen that he rested his weight on his fetlocks. Being no better the next day and not likely to improve, he was shot.

Dr. Armstrong Hopkins—by invitation—read the paper of the evening: "Medical and Surgical Work in India." The address has not been received for publication.

Meeting of October 19, 1898.

The President, Dr. S. C. Busey, in the Chair.

MEMORIAL OF DR. FRANCIS LIEBER.

Dr. Francis Lieber died of typhoid fever, while performing his duties as Acting Assistant Surgeon U. S. Army at Ft. Clinch, Fernandina, Florida, on October 10, 1898, in the 29th year of his age.

Coming of a family of distinction in learning and culture, being the grandson of Prof. Francis Lieber, the historian, and the son of General G. N. Lieber the present Judge-Advocate General of the Army, he was himself a man of thorough education, both general and professional.

On the completion of his medical studies at the University of Pennsylvania in 1891, he served as resident physician for two years in the University and Episcopal Hospitals of Philadelphia, and

thereafter continued work in the hospitals of Vienna and Berlin for nearly two years. Immediately upon his return to this city in October, 1895, he was appointed assistant at the Central Dispensary and Emergency Hospital, serving at various times on the clinics for children, the throat and chest, and general medicine. In all these positions he not only showed the value of his broad and liberal training, but a high order of ability in the application of his knowledge, and a faithfulness in the performance of his work which will ever remain a model of conscientious labor. There was no one among the younger men in the profession whose future promised brighter or whose ultimate high position was more assured than his. A mind ready, clear and broad in its grasp, united with a power of lucid forceful expression and a love of knowledge for its own sake, marked him as a born teacher, and the short experience he had as Demonstrator of Physical Diagnosis in Georgetown College revealed a peculiar fitness for imparting knowledge and infusing enthusiasm in the study of scientific medicine. His ideals were of the highest and we cannot but feel that the profession and the science of medicine has met with a notable loss in his early death.

But it was his personal qualities which endeared him most to those who were brought into anything like close relations with him. Kind, gentle and dignified, he united, in a rare manner, the courtliness of the gentleman of the old school with the brightness and vivacity of the new. Though holding, always, position and decided opinions, with an unusual power of presenting and maintaining them, the innate sweetness and chivalry of his nature made any cherishing of resentment, even in the most sensitive, impossible. If there was any one who bore Dr. Lieber an enmity he has not had the courage to confess it.

Your committee have much personal satisfaction mingled with their sorrow in being thus allowed to bear witness to the worth of one of the members of the society, who, on account of his modesty was not well known perhaps to a majority. We feel that the faculty has lost in him, one who held it in high honor, and who would, had Fate allowed, done it honor in return; and we ask that this tribute to his memory be spread upon the minutes of the society and that a copy be sent by the secretary to his sadly bereaved family.

CHAS. E. HAGNER,
T. MORRIS MURRAY,
SWAN M. BURNETT,
Committee.

The President announced the death of Dr. N. S. Lincoln and appointed the following a committee to prepare a memorial meeting: Drs. J. Ford Thompson, A. F. A. King, L. Mackall, Sr., I. C. Rosse and J. W. H. Lovejoy.

The Recording Secretary asked for authority to have bound the transactions for 1896 and 1897. Granted.

Dr. J. Ford Thompson moved a vote of thanks to Dr. Armstrong Hopkins for her interesting address on the Medical and Surgical Work in India. Carried.

ANEURISM OF THE ARCH OF THE AORTA.

By STERLING RUFFIN, M. D.

T. S., male, white, clerk, age, 56 years. First seen January 14, 1897.

Family history good ; parents long-lived. Personal history : Good health except during past year, during which there has been a dry cough, some shortness of breath, hoarseness and slight loss of weight. Never had syphilis. Periodical addiction to alcohol. Served in Confederate army, otherwise never subjected to unusual physical strain.

Upon examination I found patient to be of nervous temperament ; expression anxious ; nutrition and muscular development good ; radial arteries moderately stiffened ; arterial tension increased ; voice husky ; temperature normal.

Physical examination of chest : (a) Inspection : Præcordia bulged, otherwise negative. (b) Palpation : apex beat of heart in normal position. With palm placed beneath left clavicle, impulse, as of heart, distinguishable with each systole. (c) Percussion : Beginning immediately beneath left clavicle and extending downward to, and merging with, normal area of cardiac dullness, was a large area over which percussion note was distinctly dull. (d) Auscultation : Heart sounds normal. No adventitious or abnormal circulatory sounds discoverable anteriorly or posterioly. Respiratory sounds feeble over entire left lung ; over right lung respiratory sounds distinct and harsh. No rales.

Patient was seen at more or less frequent intervals from time of first examination. He soon began to complain of diffuse pain in chest, which progressively increased in severity ; hoarseness increased ; the area of dullness beneath clavicle and above heart became larger, dyspnœa was more pronounced and at times was urgent; the cough, dry and metallic at first, became harsher and more troublesome ; the left pupil dilated ; there was a subjective sensation of impending danger ; later the cough was accompanied by an intermittent copious expectoration of muco-purulent matter, inoffensive in odor at its commencement but very fetid during the last few weeks of life. The pain in chest became so intense that large doses of morphine were required to secure necessary rest and make life tolerable.

A short time after first seeing patient, upon examining him by lifting larynx upward with head flexed upon chest, a distinct trachial tugging could be felt, the rhythm of which was synchronous with the systolic movements of the heart. This fact, together with the increasing hoarseness and pain and the signs already noted, enabled me to make a diagnosis, with reasonable positiveness, of aneurism of the arch of the aorta. There was no inequality in force or rhythm of the pulsations of the arteries of the upper extremities or of the opposite side of the face and head.

As the chest-disease progressed the signs and symptoms, which have been referred to, grew more pronounced. Dysphagia developed and increased until there was at first a dread of solid foods and later of liquids. Nutrition suffered greatly in consequence of insufficient food. Dyspnœa was so urgent at times as to induce the belief in the patient's mind that dissolution was imminent. Breathing sounds over left lung became inaudible ; and the left pupil contracted. On the night of March 21, 1898, patient died of asthenia.

At the autopsy on the following morning I found the large aneurism of the aorta which I here present, and which is seen to begin immediately above the aortic ring and to involve the entire arch. The sac measures 7½ inches in length, and in its greatest circumference,

which is in the middle of the arch, 12 inches. The sac is felt and seen to be very atheromatous. The left bronchus, which is here attached, is greatly compressed, and its lumen is believed to have been completely obstructed for the most part during the last weeks of life, which satisfactorily accounts for the absence of breathing sounds. The large bronchial tubes were greatly distended and were filled with offensive muco-pus. When the pressure from the accumulating fluid within the tubes became sufficiently great, the external pressure on the bronchus was temporarily overcome and a part of the fluid expelled, thereby accounting for the expectoration which has been described as intermittent in character. Running across the posterior aspect of the sac is seen the recurrent laryngeal nerve. This nerve was of necessity subjected to considerable pressure; the paralysis of the left side of the larynx seemed to be complete. Pressure on the oesophagus and thoracic duct was correspondingly great, accounting for the difficulty of swallowing and the failure of nutrition. The pupillary symptoms, consisting of dilatation of the left pupil followed by contraction, were due to pressure upon the sympathetic causing at first an irritation of that nerve and later a paralysis. The absence of pulse inequalities on the two sides of the body is explained by the fact that the entire arch was involved, the cavity of the sac acting as a reservoir receiving the blood from the left ventricle and quickly distributing it in the proper proportions and simultaneously, under even pressure, to the large vessels given off from the arch and to the descending aorta. The heart is normal in size for a man in the poorly nourished conditions in which the patient died. There is no dilatation of the aortic ring, with resulting regurgitation, which would naturally be expected in the case of an aneurism so large and encroaching so closely upon the ring. This circumstance fully explains the absence of a diastolic murmur at the base of the heart. The heart valves are all normal and competent. There was moderate erosion of the vertebrae on which the aneurismal sac rested.

Kidneys were not examined at autopsy. Repeated urinalyses during life showed no evidence of kidney disease.

This case is of interest and is deemed worthy of record because of the large extent of aortic involvement and the complete absence of auscultatory signs, together with the fact that death resulted from gradual asthenia, due to the pressure effects above described, instead of from rupture, which was to be expected in view of the well marked atheroma found to exist.

DISCUSSION.

Dr. Claytor. This case is very interesting because there was no visible external pulsation. The arch is enormously dilated, and we would expect that it would have pressed on the chest wall and shown in the intercostal spaces. There was also no diastolic murmur. The aneurysm seems to begin at the origin of the aorta immediately above the heart, and in those cases there is often sufficient dilatation of the aortic orifice to give the murmur of a relative aortic insufficiency, and this may cause some difficulty in making the diagnosis if the aneurysm is a small one, or rather if it fails to give the usual diagnostic signs.

The equality of the radial and temporal pulses as to time and volume on both sides is accounted for by the fact that the whole arch was involved, so that the brachial and carotid arteries received an equal supply of blood at the same time. In these aneurysmal cases it is of particular importance to make the diagnosis,

because of the treatment. For example, if we have a case which presents a murmur in the region of the heart, a great many of us, I fear, are prone to put the patient immediately on digitalis, which in a case of aneurysm is the wrong treatment. Another form of tracheal tug besides the one which Dr. Ruffin mentioned is known as "Oliver's Sign," and that is a lateral motion of the trachea. The downward pull is produced by the aneurysm resting upon the left bronchus. Every time the aneurysm pulsates it pulls the trachea down, and in the same way may push it to one side. Drummond suggested another sign, which is elicited by placing the stethoscope over the sternum and telling the patient to take a deep breath, place the finger on one nostril and breathe out gently; in that way we get an interrupted expiratory sound, due to the pulsating aneurysm. Another sign, suggested by Parez, is elicited by placing the stethoscope on the chest and having the patient raise his arms, when a sort of creaking sound may be heard, due, probably, to a mediastinitis.

Dr. Lamb. It is noticeable that the heart and the arch of the aorta have not yet been opened. The heart appears to be of normal size. On feeling the arch there seems to be no blood clot except on the left side, so that to all appearances the current of blood was perfectly normal through the large outgoing vessels—the innominate, the left carotid and the left subclavian. I should think from the absence of clot in the major portion of the arch and the apparently normal size of the heart, that there had been no particular back pressure, and the probability is that there are no valvular lesions.

THE FUNCTION OF THE APPENDIX VERMIFORMIS.

By A. B. Storch, M. D.

I regret to say that among the majority of the members of the medical profession of the present day the belief exists that the appendix vermiformis is an atrophied useless appendage, a catch-basin for the admission of foreign substances and dangerous to man. I cannot believe that the Divine Creator—the great master mechanic—should be so imperfect and cruel as to create man, his masterpiece, with such a useless, dangerous organ as the appendix. I consider the appendix vermiformis the guardian of the cæcum. It has its functions, and its presence in man is as necessary and important as any other organ. Its attachment to the cæcum occurs at its lower posterior and internal part near the ileo-cæcal valve and its orifice is provided with a semi-lunar valve, the valve of Gerlach, to guard against the admission of foreign bodies to the appendicular canal. In addition it is richly supplied with muciparous glands which secrete a large supply of a tenacious mucus, similar to that of the fauces and rectum, this flow is stimulated by the feces entering the cæcum through the ileo-cæcal valve. Its use is to lubricate the cæcal pouch and stimulate its contractions so as to facilitate the gliding onward and upward of the fecal mass and prevent impaction in the head of the colon. As long as the appendix is in a healthy condition this tough mucus is slowly and steadily moving forward into the cæcum by the aid of its muscular coat, and it must be very difficult, as long as this mucus flow is not interrupted, and especially with the aid of the protective valve, for seeds or any other small foreign bodies to enter the appendicular canal. Therefore he who attributes appendicitis exclusively to the presence of foreign bodies is mistaken, and he who hunts for such will often hunt in vain. It is only when the motion of the mucus toward the caecum is checked or reversed by disease that seeds,

scybala or other foreign bodies are found. The foreign bodies rarely cause perforation but merely follow the reversed current after perforation has occurred. Foreign substances are rarely found in the appendix during the operation. In Roux's 200 cases only two were discovered in which the appendix contained fruit seeds. In Hunter McGuire's reported cases, no foreign body was found and in the two cases mentioned the foreign bodies such as a supposed cherry stone and bean proved to be nothing more than hardened fecal matter.

Six years ago Lewis A. Stimson asserted that in 10 cases of excised appendix only two showed any foreign bodies or fecal matter and in neither of them were they the cause of appendicitis. Fowler reports 200 laparotamies of which only two showed any true foreign bodies. In the few cases under my own supervision no foreign substance was discovered. The records of Mercy Hospital, Cook Co. Hospital and City Health Office of Chicago show that in 3700 cases of appendicitis during 14 years a less number of cases occur in Sept. October and November, that is during the grape eating season, than in the previous months.

I even feel doubtful of the pernicious effect of a foreign body in a healthy appendix unless it completely obstructs the canal. A very interesting specimen was brought before the society some time ago by Dr. Glazebrook, an appendix containing a fish bone taken from a man who had committed suicide in which I failed to detect traces of inflammation or perforation showing that the presence of a foreign body in the appendicular canal does not necessarily produce inflammation. In fact it is the distention of the cæcum from accumulatad fecal matter that stimulates the flow of mucus from the appendix and aids in clearing the cæcum by contractions and forcing its contents up through the colon. There is a state of appendicular repose after this result has been accomplished, but this process is reversed when cæcal engorgement arises again. This would not be necessary if man did not maintain the upright position, hence no animals have an appendix except those that maintain the upright position as the wombat, orang-outang and man. (See Birch and Hishfeld.) I look upon chronic constipation as one of the chief causes of appendicitis, an overtaxed appendix will break down and fail and instead of performing its functions it will allow its contents to remain in it, producing inflammation resulting in gangrene which not only destroys that organ but with the aid of poisonous products of pathoganic germs destroys the whole body. But there are other canses, such as chronic fistula, reopened ulceration and perforating ulcers occurring from typhoid disease, dysentery, tuberculosis, trauma, such as accidental injuries, sprains, and violent athletic exercise and work demanding strong contractions of the abdominal muscles, or perhaps calculi of the canal, always, or very generally influenced and fanned into activity by constipation, impacted cæcum and the aid of germs.

Right here let me emphasize that the increased frequency of appendicitis of the present day is very likely due to our mode of living with its increased and general constipation. A healthy colon is the most important salutary factor, for a clean colon is likely to be accompanied by a healthy appendix.

In reviewing I will present the following points for discussion.

1. The appendix is not a functionles or useless organ. It produces a quantity of tenacious mucus to lubricate and stimulate the cæcum and in thus facilitating fecal movements prevents impaction of the cæcum.

2. The current of this tough mucus is towards the gut, hence seeds and other foreign bodies cannot enter the appendix in opposition to this movement as long as this organ is in a healthy condition.

3. From various causes perforations of the appendix may occur. The current of mucus is then reversed and flows inwards and small bodies in the cæcum or colon may be drawn into the appendix, or even be carried into the abscess or peritoneum without being the real cause of the perforation.

4. The general and indiscriminate excision of the appendix so frequently practiced now-days under the belief of its uselessness and danger may be followed by grave results to the human system, such as impaction of the cæcum, torpor and constipation of the bowels, dyspepsia, etc. Therefore let us save the appendix if we can.

DISCUSSION.

Dr. Lamb. If we study the history of the development of the appendix we find that it is a very definite part of the cæcum; that for the first few months of fœtal life it is of the same size as the rest of the cæcum, and in most animals which have a cæcum it remains as a part of the same, and only in man, some monkeys and some of the rodents does it undergo change, which is generally, I believe, considered a degeneration, for the reason that the organ is not needed. It is found only in those animals which have a very small cæcum. In such an animal as the horse, whose cæcum will hold 7 to 8 gallons, there is no vermiform appendix. Most of the birds have two or three cæca, and in these birds there is no appendix.

I should be inclined to think that we have as yet no knowledge of any definite function of this appendage. The cæcum itself has a very abundant muscular supply for what peristaltic action is necessary; also an abundant secretional supply, and is able to do its own work without the assistance of the appendix. Like all, what I would call "vestigal" portions of the body, it is likely to cause trouble; there is always risk of the accumulation and retention therein of the intestinal contents, which may set up inflammation and possibly adhesions and perforations.

Dr. King. While thee volutionary history of the appendix as described by Dr. Lamb is extremely interesting, Dr. Storch concludes his paper with the statement that we ought to be careful not to remove the appendix on account of the constipation which may result therefrom.

This is a practical point, and if Dr. Storch had told us, which he has not done, that the people who had the appendix taken away suffered from this condition, that would have settled it.

Dr. Thompson. I have been operating on appendicitis for a great many years now, and whilst I cannot answer positively the question presented by Dr. King, yet I have never had any person complain of constipation after the performance of the operation.

It is doubtful whether the appendix is capable of protecting itself against foreign bodies. I once took a carpet tack from the appendix, the head of which had pierced it, and two-thirds, if not more of my cases had fecal concretions, which the Doctor says form after it is diseased.

My opinion is that appendicitis is killing thousands of people every year and that the mortality would be less if it could be taken out at birth by a harmless operation, but I do not believe this will ever be done.

Dr. Stone. Even if constipation followed appendiceal abscesses, it would be nothing very surprising, because the bowel in many instances is tied by firm adhesions preventing peristalsis. I have never found any grape seeds, cherry

stones, grains of corn, or anything else but fecal concretions, but I had a case the other day which shows how easily one may be deceived. In this case there was a long club-shaped appendix, and when opened there rolled out three objects which greatly resembled orange or lemon seeds, but when they were washed and cut open they resembled chalk.

Dr. Jung. To enforce the theory of Dr. Storch it would be absolutely necessary to prove that there really occurs a flow of juice out of the appendix. I do not know that this has ever been proven but I remember that Professor Ruedinger of Munich told us in his lectures, that, in proportion to its size it contained a larger supply of lymphatics than would be expected; and he thought that if the appendix had no other function, it might be a lymphatic organ.

Dr. Storch. The object of the paper was simply to call out the opinions of the experienced in the field of surgery, and this very diversity of opinions indicates that the subject is improperly understood at the present day. I cannat believe the the appendix is placed there for the purpose of destroying man. I have looked for foreign bodies in the limited cases I have had with Dr. Kerr, and have never fonnd one, and as I have said, unless there is an obstruction of the appendix checking the flow of mucus, which flow is essential, I do not think any trouble will arise from it.

I have reasons to think that traumatic causes largely predominate in appendicitis. One case which I recall was that of a boy who was an athlete and strained himself, and I believe this is a frequent cause of appendicitis. Its more frequent occurrence is especially noticeable in men who use the abdominal muscles. Statistics say that women do not suffer as much from appendicitis as men, and that is explained by the absence of trauma. Even if they do ride the bicycle now-a-days they do not engage in as hard work as men, and I have often thought that the monthly flow had a tendency to lessen the number of cases in women. At any rate, at the period of 35 or 40 years, the attacks lessen, which would seem to indicate that an active life renders persons more liable to appendicitis.

Meeting of October 26, 1898.

The President, Dr. Busey, in the Chair.

SYRINGO-MYELIA.

Dr. C. L. Allen showed some sections of the spinal cord from a case of Syringomyelia. The specimen was given to him by Dr. B. E. Baker, Pathologist to the City Hospital, Charleston, S. C., but no history of the case was obtainable.

By the term Syringo-myelia is meant the occurrence of a cavity in the gray matter of the spinal cord. This may be due to a congenital defect, but is more usually the result of the formation and subsequent breaking down,of gliomatous tissue. This sometimes takes its starting point from certain cells like those surrounding the central canal of the spinal cord, which seem to have been congenitally misplaced. Cavity formation may, however, be due to other causes, some cases being secondary to hemorrhage or vascular disease. The cavity is usually surrounded by neuroglia. Whether the neuroglia develops primarily, and then breaks down, or whether it proliferates secondarily in the place of nerve tissue proper, which has undergone degeneration, and disappeared, is a disputed point. Syringomyelia is a disease especially of young adult life and while in most cases, it seems to depend upon a congenital defect, trauma appears in some instances to be the immediate exciting cause. The cardinal symptoms are atrophy of muscles, characteristic dissociation of sensation—so that temperature and pain sense are lost while tactile sensibility is retained—and trophic disturbances, such

as swelling of the joints, symmetrical whitlow, etc.

The dissociation of sensation is due to the fact that tracts for temperature and pain sense cross in the central gray matter, while touch sense is transmitted through the posterior columns. The cavity formation occurs most frequently in the cervical region, so that the muscular atrophy, sensory and trophic disturbances are usually found in the upper extremity. It may occur in any part of the cord however and may even extend to the bulb.

The sensory disturbance is not as a rule confined to the region of distribution of any special nerves, but is apt to occur in band-like areas—like a glove, a cuff, etc.—in this respect resembling the anesthesia of hysteria

While the characteristic change is loss of pain and temperature sense, there may be also over certain areas some tactile anesthesia or hyperesthesia. The joint disturbances are similar to those of tabes. While the trophic changes occurring in the fingers resemble closely those of Morvan's disease and leprosy. The diagnosis is to be made from hysteria from Raynaud's or Morvan's disease, from neuritis and from anesthetic leprosy. As to the last, some observers believe that syringo-myelia is a manifestation of leprosy.

The cavity formation in the spinal cord being due to the action of the lepra facilli. In one case described by some Spanish observers, in which the course of the disease was that of typical syringo-myelia, the autopsy is said to have disclosed the presence of lepra facilli in the cord. Certain it is, that the trophic disturbances found in syringomyelia much resemble those of lepra mutilans.

The weight of evidence, however, seems opposed to this view of the case. The prognosis of the disease is of course unfavorable though it may run a very chronic course. It is modified by every known treatment.

CYSTIC DEGENERATION OF KIDNEY. NEPHRECTOMY.

Dr. I. S. Stone presented a specimen of cystic degeneration of the kidney with the following history:

Mrs. T., age 41, white, entered Columbia Hospital, Oct. 5., 1898. She had known of the presence of an abdominal tumor for several years. Her circulatory, respiratory, and abdominal organs were found in good condition, save what was thought to be the right kidney, which was enormously enlarged. The tumor extended from under the surface of the diaphragm on a level with superior surface of the liver, to a point on a level with, or rather below the crest of the ilium.

Operation was set for 12 Oct., but the presence of casts in the urine, caused a postponement until a more careful study of the case could be made. However, it was thought best to remove the growth which was believed to be sarcomatous or curcinomatous as early as possible and the operation was done Saturday, Oct. 15. The anterior aspect of the tumor that most readily palpated, gave the impression of a solid growth. But during its removal, the upper portion of the growth was found decidedly elastic and, finally, ruptured, discharging several pounds of starch colored fluid, largely serous in character. The incision made in this case, in a line about half way between the usual lumbar and median incision, was thought best; besides an-

swering for the nephrectomy, it also served as an exploratory opening through which to establish the presence and condition of other kidney.

The operation was completed in rather less than one hour; the latter stages hurriedly, on account of shock, and the loss of considerable blood.

A word in regard to diagnosis. In tumors of the size and situation of this one, we invariably find resonance on percussion over their anterior aspect. The peritoneum is carried forward as the development progresses, and the colon remains in front of the tumor, being held in that position by its attachments; the intestinal gas, usually present in colon, furnishes the resonance on percussion. In larger tumors, the bowel is usually pushed further toward the median line, and we will, accordingly, find a greater area of dullness. The larger cystic tumors of the kidney, have often been mistaken for ovarian tumors. The mistake is, indeed, a common one, and numerous experienced operators have recorded such observations: therefore, we are in good company when we confess to, at least one and, perhaps two, mistakes of this kind; fortunately, the patients were none the worse for the error in diagnosis.

The patient suffered a good deal from shock during the first twenty-four hours after the operation, and had a high rise in her temperature due to defective drainage, but since that event, her recovery, though slow, has not been retarded, the wound rapidly closing.

PATHOLOGICAL REPORT.

Of the exact size and appearance of the tumor at the time of removal I cannot speak, because it had already been opened and the contents evacuated when it came into my hands. It had been opened by a vertical incision along the convex margin, laying it into two halves, the pelvic portion remaining intact. The ureter had been removed, but the renal artery with a portion of its two branches remained in situ. The vessels were quite thick and very rigid; they have since been lost by failure to transfer them from one vessel to another in the preservation.

The general shape of the tumor corresponded with that of a kidney enlarged to five or six times the normal size. As far as could be determined by a close microscopic inspection the cortical and pyramidal substance had entirely disappeared its place being occupied by several large saccular dilatations, one of which would contain a man's fist. The pelvis is dilated and the calyces, with their walls much thickened, appear as large branching canals that would easily admit a finger, leading outward into the saccular dilatations that now replace the cortical layer. The interior of the pelvis of the organ contains a considerable amount of fatty material, probally the result of a degeneration metamorphosis of the primary structures. The inner surfaces of the large peripheral cavities and more particularly those of the dependent portion are lined with a distinct reddish layer of granulation tissue. There are two small free calculi with the tumor; one of them tapering in form, irregularly rounded and measuring 13 mm long with an average diameter of 5 mm. Such a mass could easily have plugged and occluded the entrance to the ureter, and I am told that a calculus was in fact impacted in the proximal end of the tube. The other body is of about the same size but less regular in outline and of a darker color. Both show the same gross struc-

ture, i. e. they are made up of thin lamellae of calcareous material, the irregular spaces between these lamellae being filled in with a grayish translucent waxy material having about the color and consistency of hard paraffin. Both are of very light specific gravity. From the forgoing and a careful microscopic examinations, the cystic degeneration is clearly the result of a calculous pyelitis, with, in all probability, occlusion of the proximal end of the ureter by an impacted calculus; retention; atrophy of the secreing structures from pressure and irritation; and finally, absorption of most of the fluid excreted, the solid ingredients being retained as excitants of a productive inflammation.

JAMES CARROLL.

MEETING OF NOVEMBER 2, 1898.

The President, Dr. S. C. BUSEY, in the Chair.

The Treasurer submitted his report for October.

Receipts, $245.00. Disbursements, $90.67.

MEMORIAL MEETING IN HONOR OF DR. NATHAN SMITH LINCOLN.

ADDRESS OF DR. IRVING C. ROSSE.

To speak of deep regret but feebly expresses what most of us felt on hearing the sad announcement of the death of our much-esteemed colleague, Dr. Nathan Smith Lincoln, which occurred on October 14 at his residence in this city. His death, appealing to us in the capacity of both professional colleague and that of personal friend, it is impossible to note the salient points of Dr. Lincoln's highly useful life and meritorious services and give them linguistic expression without considering them in this twofold relation.

Dr. Lincoln belonged to a family distinguished for both civic virtue and martial valor. It is a singular coincidence that while on the one side his great grandfather, Gen. Jonathan Chase, drew up the Articles of Surrender for Burgoyne's Army at Saratoga, Gen. Benjamin Lincoln received the sword of Cornwallis at Yorktown surrender.

Dr. Lincoln was born at Gardner, Mass. April 3, 1828, his parents being the Rev. Sumner and Eliza (Smith) Lincoln. He was the grandson of Dr. Nathan Smith of Yale College, the most distinguished surgeon of his day. He was graduated from Dartmouth College in 1850; was subsequently made L.L. D., and studied medicine under his uncle, Dr. Nathan Smith of Baltimore; at the same time he attended lectures at the University of Maryland, whence he received his degree of M. D. in 1852.

Until January 1854 he practiced his profession in Baltimore, and since that time in Washington. In 1857 he was elected Professor of Chemistry in Columbia University; in 1859 was made professor of the theory and practice of medicine; in 1860 professor of anatomy and physiology; in 1861 professor of surgery. The latter chair was relinguished in 1874 on account of private practice. After serving for several years as one of the Surgeons of the Washington Infirmary, he was appointed in 1861 surgeon-in-chief of the hospital established at Washington by the Quartermaster's Department, a position that he held during, and for some months after the end of the Civil War. He was on the Consulting Board of Garfield Hospital, and for 20 years held the same position on the board of the Children's Hospital. In 1866 he

was appointed one of the Surgeons to the Providence Hospital, an appointment that he resigned in 1875.

He was Vice-President of the District Medical Society in 1872 and its President in 1875-6, and President of the Medical Association in 1892-3. He was a member of the Philosophical Society of Washington and of various scientific societies.

He was three times married: to Mrs. Margaret E. Ridgate of Washington; to Mrs. Nannie Smith of Baltimore; and to Jeanie Thomas, daughter of Judge George Gould of Troy, N. Y.

The surviving family of Dr. Lincoln are his widow, a son and a daughter.

For several years past the onerous functions of Dr. Lincoln's calling were followed by gradual breakdown, the insidious symptoms of which culminated in an attack a year ago. From this he rallied, but early in October the decay of the nerve elements resulted in a lesion that ultimately proved fatal. As a matter of subjective prognosis the patient seemed to have a sense of the approaching dissolution that threatened his corporal existence. Somatic death was preceded by paralysis of the respiratory center with unconsciousness, and in a state of coma the soul took its flight.

Dr. Lincoln's death closes an eminently useful and distinguished career of nearly half a century in a profession that was made divine by the Great Founder of our faith, who himself deigned to practice the healing art for the benefit of humanity.

From long residence in our parliamentary city Dr. Lincoln became widely known among public men. He was one of the first surgeons called into the Garfield case and was one of few—if not the only one—to make a correct diagnosis. While not connected with the case officially, the necropsy corroborated the correctness of his views.

Personally Dr. Lincoln was modest and retiring but a man of kind and amiable character, of strict probity and sense of right, and he was devoted and true in every relation of life. The many acts prompted by his thoughtful and generous nature have endeared him to those with whom he came into social and professional contact, and many such who survive him will ever tenderly cherish his memory.

Dr. Rosse in behalf of the Committee submitted the following Resolutions which were adopted.

Resolved: That in the death of Dr. Nathan Smith Lincoln the Medical Society of the District of Columbia has lost one of its oldest, most distinguished and respected members, one who in the past was instrumental in promoting its usefulness, advancement, and reputation, and who merited and received the highest honors it had to bestow.

Resolved: That the death of one whose life was characterized by great virtues by an unsullied reputation and devotion to duty, by high professional attainments, and for great charity, will prove indeed an almost irreparable loss.

Resolved: That we deeply mourn his departure and find consolation only in the belief that his life was an ornament to and aided in elevating the tone of the profession of this District, and proved a blessing to its citizens.

Resolved: That we extend the heartfelt sympathy of the members of this Society to the family of the deceased, and that a copy of these resolutions shall be sent to them.

ADDRESS BY DR. J. FORD THOMPSON.

I hope that the calling of this meeting, instead of the usual hastily summoned

one, may establish a precedent to be followed in the future in cases of deaths of those members who have become eminent in the profession and who have won the respect and consideration of their associates.

This was conspicuously the case with Dr. Lincoln, for we have rarely been called together to mourn the loss of one who was so universally esteemed and honored both by the profession and laity; personally I can only say, that I have never heard either his actions or motives impeached. His professional and private life was clean and irreproachable from every point of view, and presents itself as a worthy example for the younger members of the Society and a striking illustration to his compeers of the end attainable by rectitude and probity in our wordly affairs.

In the many years of his activity, which continued to the last, he was conspicuous for his conscientious performance of the arduous duties of the most exacting of professions; and I know of nothing that so certainly claims the admiration of mankind as duty well performed through all the vicissitudes of a long career, especially when sordid motives form no part of the stimulus to exertion, for Lincoln died poor after the performance of an amount of work rarely if ever exceeded by any physician of this community. The man who avariciously continues to work with no other motive than to enrich himself at the expense of others may do good and fulfil the requirements of the moral code, but he may never expect to enjoy that grateful offering which is the richest reward of generous and noble natures. In this respect Lincoln had no superior in our Society and his conduct in all the relations of life was the personification of manly honor. And then he was a progressive man, abreast of the progress of his time; a student by nature and habit and deeply read in all that interests the human intellect. Having received a thorough collegiate education, it was always easy for him to grasp the salient points of a subject and his opinions always gave evidence of mature judgment and a cultivated mind. Inheritance may have had much to do in forming his character and fitting him for his professional work, for he came of a family distinguished in medicine and surgery, the members of which have left their impress upon the environment of time and place. He came to this city highly equipped for his work, and with a family reputation rarely possessed by a young physician of our cosmopolitan country. His ability was early recognized, as the various appointments to chairs of learning in our principal institutions show. Few men have had so varied an experience as a teacher, for we find him professor at different times of anatomy, chemistry, practice of medicine and lastly of surgery, to which his best years were devoted and in which perhaps his highest reputation was made. He was my immediate predecessor in the Chair of Surgery of the Columbian University which he occupied during my earlier connection with the school in the Chair of Anatomy.

I enjoyed here years of intercourse with him in the most agreeable manner, never disturbed by the least unpleasant incident, and for years we served together as attending surgeons to Providence Hospital. Since then he has been on the staff of every hospital with which I have been connected, so that my opportunities for knowing the man have been ample, and in all our association I have never seen other than the

high minded and honorable gentleman and he was utterly incapable of being anything else. He was a born enemy of sham and pretence in all their alluring phases, and what he achieved was by sheer honesty of purpose, heightened and enriched by the study and cultivation of all that tends to elevate and broaden an original happy endowment.

Mr. President I am not sure that post-mortem tributes in honor of the departed ones contribute anything to their future well being or happiness in the world beyond the grave, but I do know that there are many beautiful customs and ceremonies which are practiced in civilized life that give much comfort and consolation to the living, and among them one of the most highly cherished is doing honor to the worthy dead by reciting, as our last tribute of respect, those traits of character which distinguished them in life.

By so doing we improve and elevate ourselves in learning to recognize and appreciate the worth of others.

Remarks by Dr. Louis Mackall, Sr.:

I have listened to the history of the life, traits, virtues, and acquirements of Dr. Lincoln. Little can be added, but my pleasant associations with Dr. Lincoln for nearly a half century make it encumbent upon me to pay some tribute to his memory. I first met Dr. Lincoln in 1849 or 50, when we were students together in the University of Maryland. He was a good student, enjoying advantages of more than usual mental capacity and a thorough classical education. In this and all his subsequent career his modesty was noticeable, he had an aversion to self assertion and all efforts to attract attention. As a student he was thorough and hard working, faithful at lectures, popular with professors, always reliable, disliking all things offensive to a high toned gentleman. These qualities endeared him to the students and all who have ever been associated with him since. His courteous manner, consideration of the feelings of others, especially with the young men of the profession, made him popular. He enjoyed the largest consulting practice among the members of the profession even up to the end of his life.

While Dr. Lincoln was probably as much beloved by his colleagues as any man among the profession, his popularity was not confined to us, but extended to a large circle of friends, all classes and ranks of society, and his death must prove a great loss to all, but more especially the poor, to whom he was more than kind and charitable. Mr. President, upon reflecting on the career of so noble, so good a man, so free from all evil, what more can be said than that all through his career he acted his part well, left nothing neglected, no duty unperformed. A skilled, learned, charitable physician, distinguished surgeon, faithful friend, loving father, thoughtful husband, thorough gentleman, an honest man.

Remarks by Dr. F. B. Loring:

It is with a feeling that is very nearly akin to reluctance, that I rise to add my testimony to the tribute of love and respect to the memory of Dr. N. S. Lincoln. It is not that I, who have known him so long, and so intimately, could not fill volumes of evidence in his behalf; but the fact that his whole nature, the keystone of which was a modesty and shrinking from public display, that was as strong and inherent as it was unusual —seems to render it, now, doubly hard to find expression in words, without that appearance of eulogy that was repellent to him.

What he was, and what his life was, you all know—for it was as open as the day. No one of the younger men of our profession ever met him in consultation that did not feel that in him, he had a friend, counselor and guide, and those of his own age and date found a ripe experience, a closely cultivated mind, and a quickness of medical insight and thought that was as rare as it was remarkable. Added to this, was an utter and absolute fearlessness as a practitioner, and a positive belief and confidence in himself, that I have never seen equaled, and which won at once the respect of all who were brought in contact with him.

His knowledge of drugs was peculiar to himself, and for a quick and rapid choice of a remedy, and the extent to which he pushed its action, he had, in my belief, no equal. Even in his last years, and in his own illness, this was remarkable ; of a naturally studious mind, and with a most comprehensive and retentive memory, every new drug and article of the Materia Medica, was of unfailing interest to him, and the visit of the "man with samples," was more welcome than that of his richest patient.

As you all know his manner in the sick room was perfection, a little quiet and reserved, perhaps, until he grew to know his patient, a trifle intolerant, maybe, of fashionable malingering—but full of tenderness and care for the really ill and suffering, and as abounding with charity and thoughtfulness as it is given to man to be. What this charity amounted to, how much of his time and services were expended in it, few of you will ever know, for this work was his own ; but those of us in the various specialities, can form some idea of what the grand total must have been, from the number of special cases that he had consulted us about. No one ever appealed to him in sickness or sorrow, and went away either empty handed or uncomforted.

In his relations with his brother practitioners, we can all unite in unstinted praise ; he was absolutely free from professional jealousy, and other peoples' patients were to him as his own. He was utterly incapable of a small or mean action, and his own life was as clean and pure as that of a child. No man with his positive ideas, his strong friendships and his absolute courage of his convictions, could have lived and practiced medicine for nearly half a century, without forming personal enmities, of a greater or lesser degree, but the man does not exist who can say that he was ever unfairly treated or unjustly criticised by him or that the words of difference, that were ready enough to come quickly to his face, were ever uttered behind his back. In all the years that I have known him, in the almost daily conversations that I have had with him, I never remember hearing him say an unkind word of a brother physician—the half shrug of indifference—the damning of faint praise, were absent ; and his appreciation of the good points in other's was as hearty as it was honest.

Such then, was the man who has left our ranks ; such the character of him whom we all knew and whom we all loved. Strong and forcible and yet as tender as a woman ; a warm friend and an honest enemy ; a man without fear and without guile ; one, who without strong religious tendencies, perhaps had yet, from natural nobility of character, lived a life that was as ready for death on one day as on another—"Take him all in all, he was a man—we shall not see his like again."

(Continued in February number.)

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THE
NATIONAL MEDICAL REVIEW.

VOL. VIII. WASHINGTON, D. C., FEBRUARY, 1899. No. 9.

Original Articles.

THE MOSQUITO AND THE MALARIAL PARASITE.*

BY A. F. A. KING, M. D.

This paper is nothing more than a condensed review of recent foreign journal literature relating to the mosquito-malarial question, and the experiments that have been devised to advance our knowledge thereof—things that I think have not been republished in the medical journals of this country with sufficient emphasis and frequency to render them generally known; hence I hope they may at least be new to some of us.

At the meeting of the British Medical Association held in Edinburgh last July, Dr. Patrick Manson gave an account of the experiments of Surgeon-Major Ross, who was relieved of military duty by the Indian Government and sent to Calcutta with instructions "to work at the mosquito-malarial hypothesis." (Brit. Med. Jour. Sept. 24, 1898.)

Dr. Manson begins by repeating the different phases in the life-history of a malarial parasite in man, during the several stages of an ague paroxysm. In examining blood just before the stage of rigor, there will be seen, inside the blood corpuscle, a disc of protoplasm dotted all over with specks of black pigment. This is the malarial parasite. During rigor, these specks of pigment, instead of remaining scattered all over the disc, concentrate near its centre, while the surrounding pole protoplasm breaks up into a number of spherules. During the stage of pyrexia these spherules escape from the blood corpuscle into the liquor sanguinis, where some are absorbed by the leucocytes, but others enter red blood corpuscles.

During the stage of apyrexia, these intracorpuscular spherules grow larger, acquire amœboid properties, become pigmented, and thus by degrees attain the condition with which we first started before the stage of rigor. This is the cycle of the parasite, and its mode of multiplication inside the human body.

But like all parasites it must also have a life-history outside the human body; it must pass from one host to another. Now comes the demonstration of the so-called "flagellated body." If malarial blood taken from the human body be placed under the microscope, it will be seen after some time (but never immediately after its removal) that the malarial pigmented spheres throw out from 2 to 6 (or even more) actively-moving,

*Read at the meeting of the Medical Society of the District of Columbia, February 1, 1899.

lashing filaments (flagella) which eventually break away from the central sphere, and swim freely through the liquor sanguinis. Since this flagellation process never takes place inside the human body, but always outside of it; and since the undeveloped, unflagellated pigmented sphere, cannot possibly get out of the human body by itself (except through a wound) the idea arose that the mosquito might be the liberating agent; that the pigmented spherules, sucked into the mosquito's stomach, there developed their waving flagella, which last broke away and swam about, as they are seen to do under the microscope. Endowed with power of locomotion and penetration, it was easy to conceive that these free flagella might enter some blood corpuscle and thus start the extra corporeal life of the malarial parasite. Dr. Manson remarks that "originally this was theory pure and simple—theory however that was justified by many facts as well as by analogy; theory which has now been thoroughly borne out by subsequently and carefully-observed facts."

Dr. Ross found that when malarial blood entered the mosquito's stomach, exflagellation almost immediately occurred, and in a much larger number of instances than when the blood was spread on a microscopic slide. At least 70 per cent of the crescentic forms of the parasite were transformed into the flagellated bodies. The flagella broke loose and swam about, and finally disappeared from the mosquito's stomach, so that at first Dr. Ross utterly failed to find what became of them. He searched the tissues of hundreds of insects, but at first could find no evidence of the flagella having entered them.

Later on, however, he discovered pigmented cells embedded in the stomach walls of a "dapple-winged" mosquito (a species with which he had not previously experimented) and which he had fed on the blood of a patient suffering from "summer-autumn" fever. He also found these same pigmented bodies embedded in the stomach walls of the grey mosquito (a common species in the tropics) after feeding upon a case of ordinary tertian malaria. These pigmented cells he regarded as the extra-corporeal form of the malarial parasite. But his experiments on this line were few; there were only four dapple-winged mosquitoes, and he found the pigmented bodies in the stomach wall of only three of these; not in the fourth one. And of the grey mosquitoes only one is stated to have been examined and to have exhibited the pigmented bodies in its stomach-wall. And here arose another difficulty, in which fact and theory did not agree, viz: the cells embedded in the stomach-wall were pigmented while the flagella do not contain pigment. The specks of pigment always remain in the central sphere and never enter the peripheral flagella.

At this juncture—Manson remarks—help came from America, from Dr. MacCallum of Johns Hopkins University, who, in watching slides of blood containing halteridium—an intracorpuscular parasite of birds closely allied to the malarial parasite of man—found that spherical parasites escaped from the blood corpuscles, and that some of these spheres developed flagella, while others did not. Finally the free flagella accumulated around the spheres which did not emit flagella, and entered them just as a spermatozoid enters a germ-cell. Whereupon the impregnated spheres changed shape, and became traveling vermicules,

containing the entire substance of the original halteridium sphere, including pigment. They exhibited great powers of locomotion and penetration, going through both red and white blood corpuscles indifferently. But these changes only occurred after the blood had left the body of the bird. Manson therefore concluded that the pigment in the cells embedded in the stomach-walls of mosquitoes, fed on human malarial blood, might be accounted for in the same way, but he confesses that this is not yet absolutely proved.

Dr. Manson next directs attention to the experiments of Surgeon-Major Ross with bird malaria. Dr. Ross arrived in Calcutta to begin his investigation of the mosquito-malarial question at a season when human malaria was rare. He therefore proceeded to study malaria in birds. Birds in warm climates are subject to "plasmodial infection." Their blood contains parasites strictly analogous to those characteristic of malaria in man. These bird parasites are intra-corpuscular; they are composed of pale protoplasm carrying many grains of black pigment; they also sporulate and form flagellated bodies. Ross experimented chiefly with a variety called proteosoma. He fed grey mosquitoes on the blood of sparrows, larks and crows containing this proteosoma, and afterwards found with the utmost certainty a crop of pigmented cells embedded in the walls of the mosquitoes' stomachs, resembling those he had similarly raised from human malaria. He fed 245 grey mosquitoes on sparrows' blood containing proteosoma, and in 178 (72 per cent) of these pigmented bodies were found in the walls of the mosquitoes' stomach. He fed 249 other mosquitoes on the blood of sparrows containing no proteosoma, and in not one of these were the pigmented bodies present in the stomach wall of the insect. A still more conclusive experiment was the following: He took a lot of mosquitoes freshly hatched from their pupa shells. He fed 10 of them on the blood of a bird in which proteosoma were very abundant. On dissecting these mosquitoes afterwards he found the stomach wall of each mosquito contained—by actual count—about 100 pigmented cells. He fed a second 10 mosquitoes on sparrows' blood containing only a moderate abundance of proteosoma. In them only an average of 29 pigmented cells were found in the stomach wall of each mosquito. Finally he fed 10 other mosquitoes on sparrows' blood containing no proteosoma, and in not one of these could a pigmented cell be found in the stomach wall of the insect.

Ross next proceeded to study the development and destiny of these pigmented proteosoma bodies. He found them deeply imbedded between the fibres of the muscular coat of the mosquito's stomach—they pushed the fibres apart just as the trichina spiralis does the muscular fibres of the pig—and finally, as they grow in (proteosoma coccidia) size, they protrude as a sort of wartlike body on the outside of the stomach wall into the body-cavity of the insect. At last they rupture and discharge a lot of spindle-shaped, flattened bodies, which Ross termed "germinal rods." He found enormous quantities of these rods diffused through the body-cavity and tissues of the mosquito. He himself bursted some of the protruding proteosoma coccidia by pressure of a cover glass under the microscope and thus liberated myriads of these germinal rods. The rods have no manifest locomotive power and cannot wriggle their way through the tissues,

hence Ross thought they must be carried in the mosquito's blood. To test this point he pricked the back of a mosquito with a fine needle at a time when he knew the coccidia must have formed and ruptured. In the droplet of blood thus obtained he found innumerable quantities of the germinal rods.

On farther investigation as to the destiny of these rods, he traced large numbers of them into the veneno-salivary glands of the mosquito, then into the veneno-salivary duct which opens into the proboscis of the insect.

While formerly it has been doubtful whether the mosquito really possessed a "poison gland," it can now no longer be doubted. Dr. Ross discovered this gland accidentally while dissecting mosquitoes. He has described and figured it in detail. It was, however, accurately described and drawn so far back as 1888, (American Naturalist for October, 1888,) by Prof. George Macloskie, of Princeton University, New Jersey. He says there are six glands, three on each side, two of them poisonous, and four salivary—the salivary secretion diluting the poison. They are arranged on each side, like the leaves of a trefoil—the veneno-salivary gland being in the middle with a single salivary gland on each side of it. The ducts of all three unite, like a pedicle of the trefoil. The poison itself is a yellow oily-looking fluid. (Brit. Med. Jour., Sept. 24, 1898 ; p. 902.)

Hence he suspected that exit through the proboscis was the route through which the proteosoma germ left the mosquito. To test this point he fed mosquitoes on proteosoma infected sparrows' blood ; kept them five or six days, until he knew the germinal rods had been formed, and were occupying the veneno-salivary glands and its secretion. Then he let these mosquitoes loose on healthy sparrows in whose blood careful microscopical examination had shown there were no proteosoma. Later on he examined these "long-suffering sparrows" (as he called them) and was gratified to find innumerable proteosoma in their blood corpuscules.

Thus, then the cycle of events with regard to the proteosoma in sparrows is as follows: 1. The mosquito sucks blood from an infected sparrow ; 2d. the proteosoma swallowed by the mosquito become embedded in its stomach, penetrate the stomach wall and get outside of it, where they burst and liberate the germinal rods ; 3d. these rods find their way into the proboscis of the mosquito, through which they make their exit from the mosquito into other healthy sparrows, and these last in turn yield their blood and proteosoma to other mosquitoes, and so the process is repeated.

In commenting upon the bearing of Ross' observations on the malaria of man, Dr. Manson remarks that "what holds good for proteosoma may not hold good for plasmodium malariæ ; but the similarity of the parasites is so great that one cannot resist the conclusion that their histories are also similar." Moreover Ross has distinctly shown that certain species of mosquito do elaborate pigmented cells when fed on human malarial blood. His observations tend to the conclusion that the malarial parasite is for the most part a parasite of insects; that it is only an accidental and occasional visitor to man; that not all mosquitoes are capable of subserving it; that particular species of malaria parasites demand particular species of mosquitoes; that in this circumstance we have at least a partial explanation of the apparent vagaries of the distribution of the varieties of

malaria. "What we want now is a complete study of the various species of mosquito in malarial and other lands, and of their behavior in regard to the various forms of malarial parasites." Dr. Manson further says: "Malaria, we know, multiplies indefinitely outside the human body, independently of man. In fact, malaria is most prevalent in places where man is not. Therefore this extra-corporeal condition of multiplication must demand something more than a short cycle of from man to mosquito and from mosquito to man. My impression is that it requires an infection of mosquito by mosquito; possibly, as in tick disease, or as in silk worm disease, through the insect's ova, or through the larva."

So much for Manson and Ross.

It may now be interesting to review a paper by Dr. Lawrie (Lt. Col. E. Lawrie,) of the Hyderabad Medical School, (Lancet, Dec. 3, 1898, p. 1468). Surgeon Lawrie not only ridicules the mosquito as a cause of malarial disease, but also discredits the plasmodium in toto. He says these cells—called after their discoverer Laveran bodies or plasmodia—are not formed in all cases of malarial fever and therefore cannot be the cause of the fever. After calling attention to the similarities and differences between the halteridium and proteosoma of birds, and the Laveran bodies in man, he regards them as one and the same thing and then goes on to relate the facts established by the examination of the blood of birds in the laboratory of the Hyderabad Medical School as follows:

1. Laveran bodies are found in the blood of apparently healthy birds.

2. They are not found in the blood of birds before they are fledged and leave the nest.

3. They are not met with in the blood of all birds. They were found in 81 per cent of 101 sparrows; in 70 per cent of 36 crows; in 38 pigeons they were found in every one of 32 adult birds; none were found in the blood of 10 ducks, 4 hawks and 12 fowls.

4. The Laveran bodies in birds, like those found in malarial blood of man cannot be cultivated in pure media outside the blood.

5. They cannot be cultivated or reproduced by inoculation.

6. Two young unfledged pigeons were brought up by hand in the laboratory. Neither of them had Laveran bodies in the blood. One was fed on grain and filtered water; the other on grain and water taken from malarious swamps together with the spleen of a crow and pigeon's blood containing halteridium. The one fed on grain and filtered water developed Laveran bodies, and the other did not.

7. The temperature of the birds and the size of the spleen bore no relation to Laveran bodies in the blood.

8. No such phenomenon as "exflagellation" or a "sexual process" was ever observed among the Laveran bodies.

Surgeon Lawrie then proceeds to demolish the views of Manson and Ross and to throw discredit upon their observations, by calling attention to the size of the mosquito's stomach, as figured on the scale given by Manson, being within half a millimetre as large as the entire body of the insect. He speaks of the (almost) impossibility of getting mosquitoes to suck blood from sparrows unless the birds were previously plucked —which it is not stated (by Manson and Ross) they were; he says it is impracticable to display the insect's stomach (under the microscope) in such a manner as to be able to count "pigmented cells"

on its walls. Referring to Ross having dissected hecatombs of mosquitoes—245 in one batch, 249 in another, he remarks "this is far too easy." From the observations of MacCallum, Ross and Manson it does not follow that Ross's pigmented body, which is the unattested offspring of proteosoma, should possess the power of penetration and consequently of passing through the wall of the mosquito's stomach. "This then" (says Lawrie) "is the outcome of malarial parasitology; a crusade against the mosquito. Yet the theory of fever based upon this 'science' of parasitology has not a single proved fact to support it." Lawrie concludes as follows: "Until the physiology of the healthy blood corpuscles is thoroughly worked out speculation regarding the Laveran bodies is necessarily idle. The Laveran bodies are to be looked upon as perverted modifications of the natural cells of the blood, in which they occur as mere "sports," so to speak, of the natural blood corpuscles, and in no way as new or independent formations." * * * "Formation outstrips organization, and the offspring of the blood corpuscles—the 'sports' or Laveran bodies—fail to arrive at precise resemblance to the parents from which they take their birth."

So much for Lawrie, in whose paper, if I may venture to express an opinion, there appears to be more temper than logic. A still later publication by Dr. Amico Bignami (Lond. Lancet Dec. 3-10, 1898. pp. 1461, 1541) is much more to the point.

Bignami attaches no importance to water as a vehicle of infection, and as to the air-conduction theory he says: "Malaria does not comport itself in the least degree like a disease due to the inhalation of dust." There remains only the theory of inoculation, of which he remarks: "Malaria behaves itself, with regard to man as if the malarial germs were inoculated by mosquitoes." He calls attention to its analogy to the cattle fever of Texas, in regard to which the beautiful experiments of Smith and Kilborne, were well known.

Bignami calls attention to Laveran having relinquished his former (1891) "water-borne" theory, and his having stated in his more recent work (Traité du Paludisme, 1898. Paris,) that the mosquito theory tends to gain ground as being that which better accords with what we know of the circumstances in which malarial infection may be contracted. Bignami reviews Manson's hypothesis with some favor, and records the observation of Dionisi that pigeons became infected with halteridium after moulting when they were vulnerable to the bites of mosquitoes, and farther tells us that Koch, who has been studying malaria in the German Colony of East Africa, supports the theory of inoculation and puts forward the hypothesis that the malarial parasites have the same relation to the mosquito as the parasites of the fever of Texas, have to the cattle tick.

In August last Bignami began to experiment on human beings, by confining them in chambers into which mosquitoes, from malarious regions were introduced and retained by closing the windows with gauze. These experiments were done in Santo Spirito Hospital in Rome, the locality being absolutely free from malaria, and no case of malarial fever ever having been known to originate in the hospital itself. The persons subjected to experiment had remained in this hospital several years, subject to epilepsy or some other chronic nervous affection.

One of them had been six years in the hospital and during this time none of them had had malarial disease.

Three individuals were shut up in the "mosquito chamber" a little before dusk and kept there all night. Adult mosquitoes from a malarious locality were set at liberty, and receptacles containing larvæ were also placed in the room. These men were exposed for three days to the bites, but the result was negative; no malarial fever was produced. But the mosquitoes were few in number and so were their bites. Later on an abundant supply of mosquitoes and plenty of their larvæ were obtained. The men slept in the chamber for several weeks, and were very much bitten. The only result was some chilliness, headache and malaise, with a temperature of 99 to 99.1. They recovered without treatment; no parasites found in the blood. Experiments discontinued. Bignami tried to explain the want of success in these almost negative experiments, by the well-known insusceptibility of some individuals to take the infection after artificial inoculation. Some persons remain more than a month in malarial regions without taking the disease. The mosquitoes used may not have contained any malarial parasites; just as in Ross's experiments on sparrows, only the grey mosquito was effective.

Bignami then considered the experiments of Grassi who established the fact that in malarial districts certain species of mosquitoes exist, which are not found in healthy places. Bignami therefore proceeded to procure these identical species, which was done at Maccarese, a place 22 miles from Rome on the Civita Vecchia Road. Fresh supplies of these mosquitoes were daily sent for the purpose—some days more, some less. Only one of the men, who had been subjected to the former experiments, and who had completely recovered therefrom, consented to become the subject again. The experiment began as before, but with mosquitoes from Maccarese September 26th; on October 3rd it was interrupted and resumed October 10th. From the 10th to the 14th there were plenty of mosquitoes. On October 14th patient complained of malaise and some headache. Experiment continued; on November 1st, 3 p. m., severe chill lasting two hours; temperature 102.2. Between 9 and 10 p. m., again chilly and fever continued all night. Next morning temperature lower, but it rose in the afternoon to 102.7 with severe headache. During the night of November 2d temperature remained 102.2, and on the morning of November 3rd it rose to 104.7 the patient being in great agitation and suffering. At 5.15 p. m., fifteen grains of quinine were given hypodermically and repeated during the night. The fever subsided at 8 next morning, and on the following morning was 98.1. During the next few days quinine was continued and by the 7th of November patient rapidly recovered appetite and strength.

On November 2d the day after the first chill, blood examination was negative, notwithstanding a diligent search; but next day—November 3d—the parasites characteristic of autumn fevers were found—they belonged to the estivo-autumnal variety. At first they were few in number but rapidly became more numerous.

Dr. Bignami especially emphasizes the fact that this patient had been 6 years in the Hospital San Spirito under the constant observation of Dr. G. Bastianelli and that during this time and never be-

fore in his life had ever suffered from malarial fever. The hospital is so situated in Rome as to preclude any suspicion of the patient having got the disease without the mosquitoes. "This fever then," says Bignami, "identical with those prevalent at Maccarese, was contracted by Sola in surroundings in which there was neither the water, nor the air, nor the soil of Maccarese, but only its mosquitoes."

"In this manner I obtained an experimental production of malaria under conditions narrowly circumscribed, a healthy room being transformed into a malarious environment by introducing into it mosquitoes taken from a malarious locality." "Hence we are forced to the conclusion that this fever was actually inoculated by these mosquitoes."

In considering which species of mosquito did the inoculation, Bignami says, the lot contained culex pipiens, culex pennicilliaris, anopheles claviger, and the species from Maccarese, named by Grassi: culex malariæ. Sola was bitten by culex pipiens from August 24th, till September 19th, (in the first experiment,) and by the other three species from September 26th, until the end of October, during the last and successful experiment. While it is impossible, from these experiments, to decide which species did the mischief, both Bignami and Grassi incline to the opinion that the greatest importance attaches to the culex pernicilliaris, or the culex malariæ, or perhaps to both of these species; while the culex pipiens is probably innocuous but on this last point they do not feel positive.

In answer to the question whether the bite of the mosquito is the only means by which the parasite enters the human organism, Dr. Bignami replies: "Inoculation up to the present time is the only means for which experimental demomstration has been obtained." He adds: that with regard to Texas cattle fever, the experiments of Smith and Kilbourn demonstrate, not only that the young ticks artificially reared inoculate the infection when placed on susceptible animals, but also that the tick is necessary, in order that the infection may de transmitted.

In conclusion he says: "To sum up, malaria is a disease which is obtained by inoculation—a fact of which we have now the first experimental proof—since we have seen that an individual who has never had malarial fever, by sleeping in a healthy place where no one had ever previously taken fever, may sicken with malaria of a grave type, if bitten by certain species of the mosquito brought in the adult state from some distant locality of highly malarious character."

In a still later paper published by Drs. Bignami and Bastianelli conjointly (Lancet Dec. 17, 1898. pp. 1620, 1621,) "On the structure of the semi-lunar and flagellate bodies of malarial fever," the observations recorded, (which I shall not follow in detail) tend to confirm the views of Manson and Ross, that the flagellate bodies, instead of being the dying forms of the parasite as alleged by Lawrie, Feletti and Grassi, are in fact parasites in process of sporulation, the spores of which take on the mobile form, in the interest of the extra-corporeal life of the plasmodium. It used to be alleged that the flagellate filaments contained no chromatin, which ought to have been found in spores. By a special method of manipulation, however, these gentlemen—together with Koch—have amply demonstrated with great distinctness, that the filaments do contain chro-

matin. These new researches render probable the hypothesis that the cycle commenced in the blood of man is completed in some species of mosquito. In a final note to this article it is stated that: "Since the above was written we (Bignami and Bastianelli) along with Grassi have succeeded in demonstrating that the semi-lunar bodies do actually develop in the middle intestine of a mosquito (anopheles claviger.) It is probable that this is the same species as Ross's dapple-winged mosquito, in two of which he observed a similar development."

These three gentlemen farther agree in stating that at Lentini, in Sicily, during the months of October and November when malaria was very prevalent, the culex pennicilliaris and the culex malariæ were not to be found, while anopheles claviger was extraordinarily abundant.

This concludes all that I had to say by way of review of the journal articles referred to. The investigation is of course still incomplete. While Ross's experiments with the proteosoma of sparrows' blood seem to be conclusive, equal progress has not been made with human malaria, that is to say: the pigmented bodies found in the stomach-wall of mosquitoes fed on human malarial blood, have not been traced through the stomach wall, have not been seen to burst and liberate "germinal rods" which find their way into the proboscis of the mosquito ready to infect other persons whom the insect may bite." This therefore requires farther experimental demonstration.

The somewhat crude objection so often urged against the mosquital theory, viz: that certain regions may swarm with mosquitoes and yet its human inhabitants escape malarial disease, is entirely answered by the now well demonstrated facts: (1.) that only certain species of mosquito convey malarial infection; (2.) that even in this particular species, the infecting power may again depend upon what blood the mosquito has been feeding; (3.) a short residence in a locality infested with infecting mosquitoes is not always, or usually, sufficient to generate disease in man: the experiments of Bignami show that several weeks are required for this purpose. (4.) In a malarial locality, the infecting species of mosquito and malarial disease, may only be present during a part of the summer or autumn season, notwithstanding harmless mosquitoes may have existed plentifully during other parts of the same season. (5.) Some persons seem to be more or less immune against malarial infection. I repeat, these facts do away with the objection (urged against the mosquital theory) that mosquitoes may be abundant without any malarial disease in man.

It would be interesting to know if there be any locality on the face of the globe in which malarial disease has been known to originate without mosquitoes being present. I am not aware of any such locality being known. Indeed the distribution of the Culicidae family is so extensive throughout the world that it would perhaps be difficult or impossible to find a region in which some species of Culex does not exist. Including gnats, midges and mosquitoes, the Culicidae family embraces about 150 different species. It will therefore require a long time and many experiments before our knowledge of their relation to malarial disease can be defined with anything like scientific precision. Enough how-

ever has been already ascertained to rescue the "mosquito-malarial" hypothesis (so-called) from the undeserved ridicule with which it was formerly regarded. In fact so serious and important has it become that European governments are now devoting considerable sums of money to its investigation. This is a work in which all governments should unite. Perhaps no country is better supplied with mosquitoes than our own, and we have an abundance of malarial diseases. If the scientific bureaus of this government should detail a few men, possessing the genius of our own Theobald Smith, to work on the mosquito-malarial question, it would doubtless contribute to further the progress of the investigation and hasten the day when we shall be able to reach scientific and effective prophylaxis against malarial disease.

THE PREVENTION OF MALARIAL DISEASES, ILLUSTRATING, *INTER ALIA*, THE CONSERVATIVE FUNCTION OF AGUE.*

By A. F. A. King, M. D.

The various theories thus far presented in explanation of the phenomena of malaria were unsatisfactory and insusceptible of scientific demonstration.

According to the best medical authorities the most generally admitted facts upon which the present orthodox theory of malaria rests were as follows: 1. Malaria affects by preference low and moist localities. 2. It is almost never developed at a lower temperature than 60° F. 3. Its evolution or active agency is checked by a temperature of 32° F. 4. It is most abundant and most virulent as we approach the equator and the sea-coast. 5. It has an affinity for dense foliage, which has the power of accumulating it, when lying in the course of winds blowing from malarious localities. 6. Forests or even woods have the power of obstructing and preventing its transmission under these circumstances. 7. By atmospheric currents it is capable of being transported to considerable distances—probably as far as five miles. 8. It may be developed in previously healthy places by turning up of the soil, as in making excavations for the foundations of houses, tracks for railroads, and beds for canals. 9. In certain countries it seems to be attracted and absorbed by bodies of water lying in the course of such winds as waft it from the miasmatic source. 10. Experience alone can enable us to decide as to the presence or absence of malaria in any given locality. 11. In proportion as countries, previously malarious, are cleared up and thickly settled, periodical fevers disappear, in many instances to be replaced by typhoid fever (?) 12. Malaria usually keeps near the surface of the earth. It is said to "hug the ground," or "love the ground." 13. It is most dangerous when the sun is down, and seems almost inert during the day. 14. The danger of exposure after sunset is greatly increased by the person exposed sleeping in the night air. 15. Of all human races the white is most sensitive to marsh fevers, the black least so. 16. In malarial districts the use of fire, both indoors and to those who sleep out, affords a comparative security against malarial disease. 17. The air of cities in some way renders the poison

*Abstract of a paper read before the Philosophical Society of Washington, February 10, 1883. This paper is introduced as an appendix to the foregoing.—Eds.

innocuous ; for, though a malarial disease may be raging outside, it does not penetrate far into their interior. 18. Malarial diseases are most prevalent towards the latter part of summer and in the autumn. 19. Malaria is arrested not only by trees, but also by walls, fences, hills, rows of houses, canvas curtains, gauze veils, mosquito nets and probably by fishing nets. 20. Malaria spares no age, but it affects infants much less frequently than adults.

These generally admitted facts were insusceptible of scientific explanation by the marsh fever hypothesis of Lanscisci ; but were capable of explanation by the theory that marsh fevers are produced by the bites of proboscidian insects, notably in this and in some other countries by mosquito bites.

A review of natural history, habits, and geographical distribution of the mosquito was next presented in explanation of the twenty statements above quoted.

In discussing statement 15, it was maintained that the comparative immunity of the black races was largely due to color, the dark complexion of the skin being another illustrative instance of "protective coloring" so often observed in other animals, and by which, in this instance, the negro was protected from the sight, and consequently from the bite of the mosquito ; a similar protection being further secured by the offensive odor and greasiness of his cutaneous secretions, aided by artificial inunction of the body with grease, paint, pitch, &c., which last probably constituted the initial step in the evolution of dress. Hence malarial melanosis was considered to be the designed natural termination of ague—its conservative function—destined to modify the individual by defensive adaptation against the mosquito, whose penetrating proboscis, like an inoculating needle, infected the body with malarial poison, no matter whether this last was mosquital saliva, the Bacillus malariæ of Klebs and Crudelli, or some other element as yet unknown.

The spleen, whose function is not yet settled by physiologists, was regarded as the chief pigment-forming organ, and was designed for this purpose in the economy of the organism. Generally considered a superfluous organ, capable of removal without any great interference with the functions of the organism, it was naturally designed to meet the emergency of variation in skin-color to secure "protective coloring" against fever-producing proboscidian insects, as before indicated. The natural process, however, required exposure of the naked body to the sun during the chill stage, in order to secure deposit of the newly formed pigment in the skin. Nature had not anticipated the artificial appendage of dress, and the organism had not inherited from ancestral progenitors any provision for so unexpected an addition. Chills do not occur at night, but only between the rise and setting of the sun ; sunlight during the chill stage being a necessary requirement, in order that nature's design of cutaneous chromatogenesis may be consummated. Other racial differences between the whites and blacks—such as even cerebral capacity and variations in the skeleton—might be susceptible of explanation by blood changes resulting from malaria. The marrow of bones was also a pigment-forming tissue, and the aching of bones during ague, especially in so-called "break-bone" fever, suggested congestion and modified nutrition in the osseous structures, such as might eventually lead to modification in the

skeleton. The inhabitants of oriental countries especially were more vigorous and intelligent if they lived in elevated regions, than were others inhabiting mosquito-infected lowlands and sea coasts.

In further support of the mosquital origin of malarial fevers numerous noted medical authorities were cited, showing that, in all parts of the world where these diseases prevail, immunity was secured by protecting the body from mosquito bites. The geographical distribution and seasonal evolution of mosquitoes and other proboscidian insects were shown partially to agree with the times and places in which malarial diseases prevail; though from lack of information conclusive evidence on this point was yet wanting. There was, however, a general admission on the part of medical authorities that swarms of these insects in almost any locality were a pretty sure sign of malignancy.

On the other hand numerous instances were adduced from "Narratives" and "Travels" in which the bodies of persons had been covered with pustules, "resembling small-pox," from mosquito bites without any subsequent occurrence of fever having been recorded by the narrating authors.

This opposing evidence was inconclusive, (1) because the authors cited were not in search of medical information; (2) because the period of incubation, being often long and uncertain, fever may have occurred after the mosquito bites had been forgotten; (3) the insect proboscis (like a vaccine lancet unarmed with virus) might be uncontaminated with fever poison, or fever germs; and (4) successful inoculations of specific germ poisons are not usually followed by immediate local suppuration at the point of puncture, but only after a certain period of incubation the immediate local inflammation being rather preventative of subsequent blood infection.

The possible spread of yellow-fever contagion by the inoculating proboscis of the mosquito carrying infecting matter drawn from the blood of yellow-fever patients to unaffected persons was suggested. In epidemics, the spread of the disease stopped as soon as a freezing temperature paralyzed the mosquito, &c.

The spread of spotted-fever, typhus-fever, in jails, ships, &c., was referred to the inoculating instrument of fleas, &c.—these insects usually prevailing among filthy people thickly crowded together.

That malarial diseases were ever produced solely by the inhalation of supposed poisonous vapors was held to be untenable. Experimenters who had demonstrated the existence of specific poisons for special fevers, had equally proven that the mode by which such poisons, when obtained, could be introduced into the body for the artificial production of disease, was by inoculation through the skin. These experiments were imitations of insect inoculation. The proboscis of the mosquito was Nature's inoculating needle.

The modus operandi of the eucalyptus tree in preventing malarial diseases was ascribed tentatively to the tree being destructive to, or interferring directly or indirectly with, the propagation and development of mosquitoes.

From the foregoing conceptions as to the origin of malarial disease, the following prophylactic measures were deducible :

1st. Personal protection from all winged insects, especially during evening and night, by gauze curtains, veils, window-

blinds, or clothing impenetrable by the proboscis of inoculating insects; and, further, personal protection both from these and from all creeping insects, especially during epidemics, endemics, and in crowded jails, ships, &c., by daily inunction of the whole body with some terebinthinate, camphorated, or eucalyptalized ointment or liniment.

2d. Domiciliary protection (*a*) exteriorily, by screens of trees, walls, fences, &c., interposed at some distance between dwellings and the supposed sources of malaria, or mosquito nurseries, and with fires or lamps arranged as traps for the attraction and destruction of such winged insects as may encroach nearer. A further protection (*b*) in the interior of dwellings being secured by the use of smoke (as of tobacco or prethrum) or of some volatile aromatic substance, as of camphor, assafœtida, garlic, &c., which may be offensive to proboscidian intruders.

3d. Municipal protection by groves of trees (pines, cedars, or eucalyptus) planted between cities and the sources of malaria and mosquitoes, together with cordons of electric or other lights, between said grove and the marsh, the lights to be arranged as fly-traps for the retention and destruction of such winged insects as may be thus secured.

With relation to the city of Washington, it was suggested that the Washington monument would afford a good opportunity (by placing illuminated fly-traps at different elevations on its exterior) for ascertaining the height at which mosquitoes fly, or are brought by the wind from the adjacent Potomac flats. The proposed reclamation of the flats could scarcely do more than mitigate malarial disease, so long as our summer and autumn southern breezes come, laden with mosquitoes, from the miles of unreclaimed swamps farther down the river, as at Four-mile run and other nearer localities.

THE NATIONAL MEDICAL REVIEW,

EDITED BY

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WITH THE CO-OPERATION OF

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Edwin B. Behrend, M. D.,

AND

THE MILITARY SURGEON,

A SUPPLEMENT.

OFFICE: 1408 Twenty-first Street, N. W.

WASHINGTON, D. C., FEBRUARY, 1899.

Notices and Reviews.

THE PRACTICE OF OBSTETRICS: By American Authors. Edited by Charles Jewett, M. D. Cloth, net, $5.00; leather, net, $6.00. Lea Brothers and Co. Philadelphia and New York.

This new work covers the whole subject of Obstetrics and cognate branches as understood and practiced by the leading American authorities to-day. It is a clear and practical treatise suited to the needs of medical classes and also furnishes in moderate compass a concise and comprehensive guide for the practitioner. The thirty four chapters which the book contains were written by nineteen teachers fully competent for the task they have accomplished. In the first chapter Dr. Browning treats of the female pelvic organs and the mammary glands. The physiology of pregnancy is considered in five chapters by Manton, Palmer, and Dickinson. The physiology of labor in three chapters was written by Jewett and Buckmaster. Robb and Bartley consider the physiology of the puerperium in two chapters. Seven chapters are devoted to the pathology of pregnancy by Manton, Etheridge, Van Cott, Vineberg, and Henrotin. The pathology of labor is fully covered in six chapters by Cameron, Webster, Etheridge, Jewett, and Edgar. Van Cott, McLane, Hamilton, Whitridge Williams, and Chapin treat of the pathology of the puerperium in four chapters. In the eighth and last part obstetric surgery is fully discussed in six chapters by Robb, Jewett, and Davis. It will be readily seen that the plan upon which the editor has arranged the volume is simple, rational, and intelligible, and his assignment of chapters shows his critical knowledge of each man, and his ability to secure the best talent. The leading colleges are well represented in the list of authors, and this fact alone will bespeak immediate wide acceptance in the student world. Whilst it is utterly impossible in our limited space to review this book as it deserves, yet we cannot refrain from making a few quotations which will indicate clearly the value of the book. In speaking of the puerperal state Robb says, among many other good things, "there is no such thing as milk fever. The secretion of milk of itself, be the breast ever so hard or swollen, goes on in innumerable cases without a rise of temperature. If the puerpera has not been subjected to harmful influences she will have no fever. Milk fever is traumatic fever, and traumatic fever means infection. It is

hardly possible to repeat this fact too often, for if it is neglected valuable time may be wasted in vain hopes, when a rigid search might reveal the pathological cause and enable us at once to institute measures to rectify the condition." The chapter on embryotomy has a wealth of detail which seems almost out of place in a modern work on Obstetrics. We have a fairly good acquaintance with the physicians of this city yet in a practice of twenty years we have never found one who confessed to having performed embryotomy. Our preceptor, who for years had the largest private and hospital obstetrical practice in this city, declared he never had seen a case requiring embryotomy. We wonder if Dr. Edward P. Davis ever performed the operation. We were once called in consultation to treat a woman for sepsis after embryotomy. It was in a country town and she had already been delivered of six or more children.

THIRTEENTH ANNUAL REPORT OF THE STATE BOARD OF HEALTH OF THE COMMONWEALTH OF PENNSYLVANIA. TWO VOLUMES. 1898.

We congratulate Dr. Benjamin Lee and his associates of the Board of Health for the great good they have done for their State by scientific sanitation. These two volumes contain many valuable papers of great interest to the medical profession throughout this country. To mention only a few, we would call especial attention to the one on the Erection of School Buildings. We fancy that Dr. Lee must be an enthusiastic rider of the bicycle for never have we read such a glowing eulogy of that popular means of rapid transit as we find in the pages of his article on the Sanitary Aspects of the Bicycle. A. M. Sloan, Esq. has contributed a paper with the title "Are the Breakers Ahead of our Educational Ship", which we find of special value and commend to the serious consideration of those who may be fortunate enough to receive a copy of this Report. The Report of the State Quarantine Board must afford great gratification to the people of Philadelphia, especially as the account rendered is indicative of honesty and efficiency.

A TEXT BOOK OF MECHANO-THERAPY. By Axel V. Grafstrom, M. D. W. B. Saunders. Philadelphia. 1899. Price $1.00 net.

The author presents in this little volume the subject of mechano-therapy in a condensed form. He writes in a rational and popular way, in order to make his subject plainly understood by the student. He has followed the system practiced by the Royal Gymnastic Central Institute, Stockholm, Sweden, with such modifications as are recommended by prominent teachers and authorities of this science. This brochure has been prepared especially for the use of medical students and trained nurses and it will prove a valuable addition to their collection of books.

THE AMERICAN YEAR-BOOK OF MEDICINE AND SURGERY. Edited by George M. Gould, M. D. Price, Cloth, $6.50; Half Morocco, $7.50. For sale by subscription. W. B. Saunders, Philadelphia. 1899.

Of the making of books there seems no end; but if there ever was a reason for being, this volume enjoys that pre-eminence. The work is remarkable in every one of its eleven hundred and two pages. The amount of labor expended in the production of this magnificent volume must have been simply marvellous. It is truly a yearly digest of scientific progress and authoritative opinion in all branches of medicine and surgery. It has been drawn from journals, monographs, and text-books, and has been collected and arranged with critical editorial comments by twenty-eight American physicians and surgeons, each eminent in his own special branch of medicine and surgery. We advise every doctor who pretends to do more than routine practice to become the immediate possessor of this work. There is no subject left untouched by skilled hands. It is truly a library in itself. To us in Washington it is of untold value as we can follow the compend to the Library of the Surgeon-General's Office and peruse at leisure the article complete. We miss Pepper but are compensated by the valuable work of Stengel and Edsall.

Progress of Medicine.

GENERAL MEDICINE AND SURGERY.

UNDER THE CHARGE OF

EDWIN B. BEHREND, M. D.

Thrush of the Bladder.

A 64 year old man suffering from diabetes (4 per cent of sugar in the urine) was admitted to the hospital suffering from an apparently very severe attack of cystitis. The urine was pale, turbid and contained a large number of round white bodies about the size of hemp seed. About 300 gm of urine were obtained with the catheter and a considerable amount of gas was found to have been formed in the bladder. The last few cc of urine were passed foaming and with the effervescing noise characteristic of pneumaturia. The whitish masses were composed of oidium albicans. The gas was produced by the baccillus coli commune. With the cystoscope the mucous membrane of the bladder appeared reddened in spots, and here and there in these reddish spots, appeared white masses the size of hemp seed, especially in the neighborhood of the ureteral openings. How the infection occurred could not be made out. Frisch (A. v.) Wien. med. Wchnschr., 1898, No. 39.

Ascaris Lumbricoides in the Trachea: Death.

A woman, 36 years of age, had a diarrhea, apparentiy tubercular in nature. She passed a number of lumbricoid worms and their eggs with the stools. One worm was vomited up and at this time convulsions occurred. The convulsions became more severe and dyspnea set in. The convulsions were ushered in with a tonic contraction of the whole body; the head was retracted, the face reddened, lips cyanotic, conjunctiva injected and the pupils were somewhat dialated. This period lasted for several minutes and was followed by clonic contractions of the muscles, reddening of the face, frequent respiration with short inspiration and strong expiration, and by tracheal rales. Patellar reflex could not be elicited; general sensibility diminished, unconsciousness, thready pulse and cold sweats. The convulsions could not be controlled and the patient died, after a convulsion, in a state of great exhaustion.

At the autopsy, incipient tuberculosis was found in the lungs; in the intestine, chronic enteritis, and tubercular nodules in the intestine and peritoneum. Five large lumbricoid worms were found in the intestine in spite of the employment of numerous anthelmintics. In the brain there was no change. The author believes that the metabolic products of the worms produced the violent paroxysms. Moscucci. Convulsive paroxysms, suffocation and death from ascaris lumbricoides in the trachea. Riforma med., 1898, No. 11.

The Effect of Acute and Chronic Diseases upon the Testicle.

The author observed in 75 per cent of acute and chronic general diseases an extremely injurious influence of acute disorders opon the formation of semen. It appeared as if the duration of the disease was extremely important. Age is likewise a weighty etiological factor. In chronic diseases, an increase in the interstitial tissue of the testicle takes place. If there were cachexia, the author regularly found thickening of the walls of the tubules and increase of the interstitial tissue. Spermatogenesis suffered most in tuberculosis; generally it was found to have ceased entirely. Diabetes and carcinoma also caused diminution in the formation of spermatazoa. The changes were slighter in diseases of the circula-

tory apparatus and least in interstitial nephritis. In adults, the cells of the testicle, especially those lying in the basement membrane of the tubules, contain large quantities of fat which never disappears even in tuberculosis or cancer. This fat probably serves as nutritive material to the spermatozoa. Cordes. Investigations as to the influence of acute and chronic general diseases upon the testicle and especially upon spermatogenesis; also observations upon the occurrence of fat in the testicle. Virchow's Archiv., Bd. cli, Hft. 3.

CLINICAL DIAGNOSIS.

UNDER THE CHARGE OF

ANDREW STEWART, A. M., PH. D.

The writer has already reported three cases of eosinophilia due to trichinosis (Johns Hopkins Bul., 1897, April, pp. 79-81; and J. Exp. Med., 1898, iii, No. 3, pp. 315-347), he being the first to observe this interesting relation. The summary of a fourth case is now presented. The following diagram of differential counts of the leucocytes of the case, extending over a period of over three months, is of high interest, showing the increase of the eosinophiles (at the expense of the neutrophiees) in the beginning of the disease, and their gradual return to the normal with convalescence :

Date. 1898.	Leucocytes, per c. mm.	Percentage of Various Forms.			
		Polymorphonuclear Neutrophiles.	Small Mononuclears.	Large Mononuclears and Transitional Forms.	Eosinophiles.
Aug. 8.	18,100	.....	.....	.....	.....
Aug. 10.	.....	.....	.....	.....	48
Aug. 13.	.....	43	7.3	1.7	48
Aug. 28.	8200	45	14.5	2	38.5
Sept. 4.	7900	49	18.5	2.5	30
Sept. 18.	.....	55.2	19.6	2	23.2
Sept. 25.	9600	61.5	16	2.5	20
Oct. 2.	8750	54	19.5	2.5	24
Nov. 5.	.....	49	40	2.5	8.5
Nov. 13.	.....	64.5	27	3	5.5
Nov. 20.	.....	61	27	4.5	7.5

The symptoms and the physical examination of the patient, a small boy, were very indefinite. He was of dull appearance, his eyelids were somewhat swollen, heart and lungs negative, no abdominal tenderness or rose spots and no swelling or tenderness in the muscles. Temperature 98°—100.2°, spleen not palpable, etc. An examination of the blood revealed a high grade of eosinophilia and a diagnosis of trichinosis was thereupon made. Under cocain anesthesia a small piece of muscle was removed from the left gastrocnemius muscle, in which young, non-capsulated trichinæ were found. It is suggested that the eosinophiles in trichinosis owe their origin to the neutrophiles, the transformation taking place in the affected muscles. The writer concludes as follows :

"Of course in a few other conditions an eosinophilia is noted in the blood, notably in bronchial asthma during the paroxysm and in splenomyelogenous leucemia, but the eosinophilia in these conditions is of not so high a grade and, moreover, the diagnosis is easily reached by means of other signs and symptoms. But in trichinosis, except in the most marked cases or in the epidemic form, a diagnosis is impossible without a blood examination, and in conclusion I would like once more to suggest the great advisability of making the examination in febrile cases of doubtful origin and in cases with indefinite intestinal or muscular symptoms. This examination will require but a few moments and by the demonstration of a marked eosinophilia it may clear up a case now and then which otherwise would go down to posterity as another of that great class of cases, the undiagnosed." Brown, Thos. R. The diagnosis of trichinosis by means of the great increase of the eosinophiles in the blood ; report of the fourth case. Med. News, 1899, lxxiv, 12.

A Stain for Blood Smears.

R. Using distilled water as a solvent, mix in the following order:

Sat. sol. toluidin-blue (Grubler)		24 parts,
" " acid fuchsin	"	1 part.
2 per cent sol. eosin	"	2 parts.

Agitate throughly for a few minutes and use the supernatant fluid. The stain is ready for immediate employment and gives good results, even at the end of 10 or 12 weeks, though requiring, then, a longer time of action. Prepare the smears according to Cabot or Coles, and fix at 120° for at least 20 minutes, though a longer time (even several hours) will give better results. The temperature may be raised to 128° without disastrous results. Alcohol fixation does not bring out the neutrophilic granules so well. Stain from 1 to 3 minutes; wash thoroughly, but rapidly in running water; pass two or three times through the Bunsen flame; mount in balsam and examine with 1-12 oil immersion, flat mirror and open diaphragm. The leucoytes stain as follows:

Small lymphocytes—nuclei deep blue, with dark band of wavy outline interwoven throughout; protoplasm pale blue.

Large lymphocytes—nuclei as above; protoplasm faint, with occasional intensely blue granules.

Transitionals, like large cells.

Neutrophiles, nuclei sharp, dark-blue with well-marked chromatic connecting thread; granules, rich pink isolated from matrix. In those cells giving indications of degenerative changes the stain is faint.

Eosinophiles, nuclei greenish-blue; granules deep maroon.

The red cells are brownish red, faint or intense according to length of staining action. Myelocytes stain excellently and the plasmodium malariæ is colored a sharp turquoise blue. Prince (L. H.,) A blood-stain. Phil. Med. J., 1898, ii, 1366.

(C. D.) **Washed-out red blood corpuscles in the urine as an acid in the diagnosis of renal calculus. Amer. Month. Microscop. J., 1899, xx, 56.**

Blood may occur in urine and give to the naked eye no evidence of its presence. Such a condition is not infrequent in the hemorrhage produced by a stone in the pelvis of the kidney, or the ureter, and failure to examine the urine microscopically will rob the clinician of a valuable aid in diagnosis. Microscopically studied, blood exhibits itself in the urine: (a) As the normal red blood corpuscle. (b) As the crenated red blood corpuscle. (c) As the washed-out red blood corpuscle, or the so-called "Shadow corpuscle."

Particular interest centers about this third form of the washed-out red blood corpuscle, because it is present in freshly excreted urine only when the hemorrhage is high up in the urinary tract.

A washed-out red blood corpuscle is one whose hæmoglobin has been nearly or quite dissolved out. It appears under the microscope as a pale yellow, or colorless ring with a very delicate but distinct border. It is somewhat smaller than a normal red blood corpuscle, and frequently exhibits little irregularities in its contour.

Such cells are usually present in small numbers in the urine. They never form a sediment visible to he naked eye, and are only seen on microscopical examination.

If normal red blood corpuscles are allowed to stand in urine for 48 hours or more, many of them will become washed out, a fact which should not be forgotten in examining old specimens of urine. Washed-out red blood corpuscles occur in a number of pathological conditions. Von Jaksch names acute nephritis, acute congestion of the kidney, and miliary tuberculosis of the kidney, or its pelvis. That they are many times present in the urine during or after an attack of pain caused by renal calculus is certain and their presence is of diagnostic value in excluding the causes of acute abdominal pain, such as appendicitis, gall stone, ulcer of the stomach, intestinal colic, floating kidney, and gastralgia. The urine passed during and for some days following the attack should be examined fresh. Care should be taken not to confound the spores of certain fungi with washed-out red blood corpuscles; they are somewhat alike in size, but the spores have more distinct borders and usually contain yellow colored granules in their interior.

BIOCHEMISTRY IN RELATION TO MEDICINE AND HYGIENE.

UNDER THE CHARGE OF
E. A. DE SCHWEINITZ, Ph. D., M. D.
Director Biochemic Laboratory, B. A. I., Agricultural Department.

Bacillus typhi abdominalis in milk and butter.

The authors made a study of the possibility of butter being contaminated with typhoid bacilli. They conclude from their studies and experiments that typhoid bacilli may remain in butter in an active virulent condition for at least ten days, and think that butter which contains considerable quantity of butter-milk might retain these bacteria for a much longer time. Hence it is a matter of considerable importance that persons handling milk which is to be used either for direct consumption or for butter should be very careful to know that there has been no previous opportunity for typhoid infection. H. L. Bolley and Merton Field, Centralbl. f. Bakt., Vol. 4, No. 24. Dec. 30, 1898.

The Increase of Toxin production of Diphtheria Bacilli in Association with Streptococcus.

The author made a number of experiments to see what effect the association of streptococci with diphtheria bacilli would have upon the development of toxins by the latter. After a number of experiments he comes to the conclusiou that in mixed cultures the toxin production is more rapid and stronger than in pure cultures. This toxin is not a mixed toxin as has been suggested, but a toxin identical with the known diphtheria toxin. In other words a change has taken place in the culture media which has caused the diphtheria bacilli to produce a stronger poison. This change can best be expressed by supposing an increase in the virulence of the germ. The practical point which must be considered therefore, is that in a mixed infection we have a more rapid and greater development of diphtheria toxin. Ueber die Steigerung der Giftproduction der Diphtheriebacillen bei Symbiose mit Streptokokken. Paul Hilbert, Ztschr. f. Hyg. u. Infectionskrankh., Vol. 29, pt. 2.

Report on the Growth of the Typhoid Bacillus in Soil.

The author made some investigations upon the growth of the typhoid bacilli in various sorts of soils and comes to the following conclusions: 1st. the soils which are favorable to the growth of the typhoid bacillus are those which have been cultivated, more particularly those of gardens and in the neighborhood of houses. In these soils the bacillus was found to be alive and to have retained its vegetative properties for as long as 456 days. This was found true with sterilized soil which was moistened throughout with water. On drying this soil even when it had become so dry that it could be made into a fine powder, the typhoid bacillus could still be obtained from it and had retained its vegetative properties although it grew more slowly than when obtained from the same soil in its moist condition. 2nd. Certain virgin soils, sandy or peaty, after being sterilized and the addition of a suitable amount of water, will not serve for the growth of the typhoid bacillus. There was no evidence to show what property of these soils it was which killed the bacillus (possibly the organic acid often present in peaty soils exerted some influence. E. A. de S.) 3rd. In favorable soils in a moist condition the bacillus grew not only at 37°, but also often at much lower temperatures between 9° and 24° Centigrade. Sidney Martin, M. D., F. R. S. The Twenty-seventh Annual Report of the Medical Officer of the Local Government Board, London, 1898.

The Effect of Breathing upon the Volume and Form of the Blood Cells.

The author made some investigations and measurements which showed the effect of breathing upon the volume and form of the blood corpuscles, and comes to the following conclusions : That in the body a regular increase and decrease of the size of the red and white blood corpuscles takes place. The distension takes place in the capillaries under the influence of the carbondioxide, while the contraction of the blood corpuscles takes place in the lungs where the carbondioxide is removed. In the case of the red blood corpuscles, there is not only under the influence of the carbondioxide, a distension but also a change in their form and the blood corpuscles approach more nearly the form of a ball. Consequently under the microscope the width appears less and the corpuscles appear smaller. Ueber den Einfluss der Athmung auf das Volum und die Form der Blutkörperchen. H. J. Hamburger, Ztschr. f. Thiermed., Vol. 2, pt. 6.

Effect of Tannin Upon the Progress of Tuberculosis.

The investigations of the author showed that the effect of tannin upon the progress of tuberculosis is practically negative. That while the substance may exert a destructive influence upon the germ outside of the body, it may not have any effect when injected into the body at the same time with the germ. Action du tannin sur bacille de Koch et sur la marche de la tuberculose experimentale. J. Sabrazès, Comp. Rend. Soc. d. Biol., Vol. 5, No. 35. Nov. 18, 1898.

Rœntgen Rays in Experimental Tuberculosis.

The author conducted some experiments to determine the effect of the Röntgen Rays upon experimental tuberculosis in guinea-pigs and concludes that so far as generalized tuberculosis is concerned, the X-rays are without effect. They do exert however, a slight influence upon local tuberclulosis but it could not be demonstrated that a cure was brought about by this action. Versuche mit Röntgenstrahlen bei experimenteller Tuberculose. Dr. R. Mühsam, Deutsch. Med. Wochenschr., No. 45. Nov. 10, 1898.

The Bactericidal Action of Alcohol.

The author made some studies upon the bactericidal action of alcohol and alcoholic solutions, and comes to the following conclusions : Ethyl alcohol has ordinarily a rather weak bactericidal action. It acts more energetically in solutions of 50 to 70 per cent than when absolute, and while it destroys spore-free germs it does not destroy spore-bearing bacteria. Boiling alcohol or alcohol under pressure acts as a bactericidal agent in proportion to the increase of the amount of water in which it is mixed. Antiseptic substances dissolved in alcohol are less effective than the same substances dissolved in water and the bactericidal action changes in inverse ratio to the amount of alcohol. Ueber die baktericide Wirkung des Alkohols. Rafael Minervini. Ztschr. f. Hyg. u. Infectionskrankh, Vol. 29, hft. 1.

The Resistence of Diphtheria Serum to Various Physical and Chemical Influences.

In studying the effects of light and chemical reagents upon the diphtheria-serum, the author concludes after careful experiments, that within four months' time the action of the serum which has been exposed to the light is materially decreased. That the green and blue rays of the spectrum have more effect upon its antitoxic activity than the red and yellow. There appears to be no direct connection between the activity of the serum and its color. Heat exerts a more injurious influence upon serum than light. Consequently it is necessary that the serum should be preserved in a cool place. Oxygen has a destructive influence. Nitrogen gas, carbon-dioxide gas and hydrogen gas have pretty nearly the same effect in destroying the activity of this serum. Consequently there is no advantage apparently in preserving the serum in contact with any of these gases instead of the air. Ueber die Resistenz des Diphtherieheilserums gegenüber verschiedenen physikalischen und chemischen Einflussen. Felix Müller. Centralbl. f. Bakt., Vol., 24, No. 8, Aug. 31, 1898.

Therapeutic Notes.

Caution in the use of Proprietary Remedies.

In a recent number of the Medical Register of Richmond we find the following words of caution: Whenever a preparation of value is perfected by the enterprise and patient investigation of any manufacturing chemist, there immediately appear upon the market a score of imitations, the manufacturers of which have expended upon their product a minimum of time, capital, and brains. To trade thus upon the reputation of an established remedy by similarity of name is culpable enough, but to go further and appropriate for the imitation the literature of the original, making it appear that certain investigations which have proved the value of a given remedy apply not to this particular product, but to the crude ingredients which it contains, regardless of the special manner in which they are combined, is a form of imposition which should not be tolerated. Yet just such a case has recently appeared, and it so emphasizes this point that we refer to it specifically, even at the risk of having it appear that the foregoing remarks are intended merely to lead up to an advertisement of this preparation. No proprietary preparation in recent years has attained greater or better deserved popularity than Gude's pepto-mangan, nor has any been handled in a more ethical manner. The natural consequence has been that innumerable preparations in imitation of this product have been placed on the market, all with more or less similarity of name, and all clearly intended to be sold on the merits of the original. The last of these is put up by a house whose circular quotes many physicians as attesting the therapeutic value of peptone combined with iron and manganese. As a matter of fact nearly all the authorities thus quoted stated specifically in their reports that their observations were carried on with pepto-mangan. The agents for Dr. Gude's preparation in this country have since received from most of the physicians whose statements were thus perverted written assurance to the effect that this is the case, and that they regard as gross injustice to themselves any attempt to make their statements apply to another iron and manganese preparation which they have never used.

Excellent Results from Maltzyme.

Dr. C. F. Tucker of Syracuse, N. Y. writes that he has had excellent results from the use of Maltzyme.—He does not prescribe any other malt preparations, or any Cod Liver Oil combination other than that with Maltzyme.

Since his attention was first called to Maltzyme, i. e., in April of last year, he has prescribed the four preparations of it constantly, and with uniformly satisfactory results.

One patient, who claimed she could not take Cod Liver Oil preparations, took Maltzyme with Cod Liver Oil with decided benefit during the entire summer, even during the hottest weather, very much to his surprise.

In his opinion Maltzyme is a decided improvement over all other preparations of its class, and he wishes to thank the Maltzyme people for having given the profession such a valuable and useful product, free from the objections found in the diastatic malt products we have had to depend upon in the past.

Sanmetto in Enuresis Diurna et Nocturna.

Some years ago my attention was called to Sanmetto as a remedy for troubles of the genito-urinary organs, particularly in men past middle life, and I have had some very gratifying successes with its use. Recently I was called upon to prescribe for two boys, eight and ten years of age respectively. Everything had been tried, including whipping, to break up the "habit" of wetting the bed at night, and one of them also his clothing in the day time. It occurred to me that Sanmetto would be worth trying, and to the delight of every one concerned it has been perfectly successful; and now for the past six months and twelve months respectively, these boys have been entirely cured of

this unfortunate "habit". Undoubtedly the trouble was due to irritability of the prostate and mucous membrane of the bladder; hence the prompt and permanent relief afforded by Sanmetto. I have written these few lines hastily, calling the attention of the profession to these cases, with the hope that others will try the same remedy for the same "habit."

Baltimore, Md.

James A. Stewart, M. D.

Upbraiding the Doctor.

Dr. Samuel Wolf, Physician to the Philadelphia Hospital, and Neurologist to the Samaritan Hospital of Philadelphia, presents among others, a case which is of special value at this time. He says:—"The entire experience of the writer with antikamnia is not confined to the series of cases on which this paper is based, although its previous use had been limited to a few prescriptions, and those in cases where it was given after the usual routine had been exhausted. It is, however, to a striking result in one of these instances, that the incentive to investigate more fully, is to be largely attributed. A man of 42, in the course of an attack of La Grippe, was enduring extreme torture from the pain of a trigeminal neuralgia. The second ten grain dose of antikamnia gave such complete and permanent relief, that my patient, a druggist of large experience, upbraidingly asked me, "why didn't you prescribe this remedy before?"

La Grippe.

"Maltine with Cod Liver Oil" has, in previou epidemics, proved to be a preventive against serious complications growing out the "grip."

"Malto-Yerbine" (Maltine with Yerba Santa) has proved more efficient than any other remedial agent in allaying the otherwise intractable cough which so frequently accompanies an attack of the "grip."

"Maltine with Phosphate Iron, Quinia and Strychnia" has, in previous epidemics, served the medical profession as a tonic of great power in restoring to a normal condition those who have been enfeebled by the "grip."

Alimentation in Ulcer of the Stomach.

In an interesting article on the treatment of ulcer of the stomach by rest and rectal feeding, in the Chicago Medical Recorder, Dr. James B. Herrick calls attention to the following important therapeutic points: (1) Secure the willing consent of the patient by a clear explanation of the reasons for such treatment, the method of carrying it out, and the probable length of time required. (2) Empty the bowel by a preliminary laxative and cleansing enema. (3) Absolute rest in bed for from two to six weeks. (4) Nothing, not even water, by the mouth, for from three days to three weeks. It is astonishing how well patients tolerate the lack of food and water after the first abstinence of twenty-four hours. (5) Enemas should be given at regular intervals of four hours through a soft rubber tube inserted rather high into the rectum. Specify the hours as 8, 12, 4, 8, 12, omitting the hour of 4 in the morning. The amount should not exceed four or five ounces. I commonly prescribe as follows for each enema:

Somatose	1 drachm.
Egg	1 half.
Peptonized Milk	4 ounces.
Salt	a pinch.

This, of course, can be varied, both as to ingredients, quantity and hours. I believe it well, however, to give the bowel the long period of rest as indicated, from 12 midnight to 8 next morning. (6) A simple enema of one pint of water is to be given every morning at 7. The patient may retain this, in which case it quenches thirst. Or it may be rejected, acting as a cleansing enema. (7) As pain, tenderness and vomiting cease, stop one rectal enema daily, and substitute a meal by the mouth, say four to six ounces of peptonized milk with a teaspoonfull of somatose. The amount can gradually be increased and other liquid and light diet added. (8) Allow the patient to get out of bed only after rectal alimentation has been entirely stopped. It is best to keep the patient in bed for at least four weeks.

Notes from a Physicians Diary.

La Grippe is again prevalent through-

out the land, being epidemic in many sections of the country. The sick list is greatly augmented, much valuable time is lost, and the mortality is directly and indirectly increased by its presence. The disease in its protean manifestations is almost regarded as the scourge of the country, for it leaves in its wake more sorrowing hearts and shattered homes than any disease known in recent years. The Medical profession of to-day should realize the importance of early and judicious therapeutics as applied to the treatment of La Grippe. From practical observation by men of experience in professional circles the following conclusions seem warranted. When a physician has diagnosed his patient's ailment as one of La Gripppe, free catharsis should at once be instituted. For the intense headache, coryza, backache and general soarness, the following should be administered:

Liquid Antipyretic (Tilden's) 4 ounces, Sig. One teaspoonfull every three hours. After the pyrexia is under control, the sequella of La Grippe, may be permanently removed by the administration of Tablets of Antipyretic (Tilden's) and Quinine (2 1-2 grs. each) until all grip symptoms disappear. The troublesome cough which is a frequent accompaniment of La Grippe is controlled by the administration of teaspoonful doses of whiskey ad libitum.

Important Announcement Concerning Antitoxin.

Advancements in the production of antitoxin are always of wide spread general interest. The potency of Mulford's Antitoxin, known as Standard and formerly containing 100 units per C. C., has been increased in unit strength to 250 units per C. C., without any advance in price.

This affords a serum of high potency for general use at a very moderate cost. Owing to the constantly increasing demand for Mulford's Improved Antitoxin Tube, all the sizes of Standard (Special) excepting No. 4 containing 3000 units, will now be furnished in the new package. Standard containing 100 units in each C. C. will be supplied in glass stoppered vials on order specifying this strength.

Concentrated Antitoxin, contains from 500 to 800 units per C. C., is to be preferred because the smaller bulk insures quicker absorption and prompter results.

The integrity of the serum is guaranteed for at least one year but the privilege of exchanging for a fresh product every six months, if physicians or druggists so desire.

This cannot fail to interest the many friends of Mulford's Concentrated Diphtheria Antitoxin.

McArthur's Syrup of Hypophosphites.

PHILADELPHIA, Pa., Dec. 8, 1894.

It gives me much pleasure to testify to the usefulness of your Syrup of Hypophosphites, since my attention was called to it. I have used the syrup in laryngeal and pulmonary tuberculosis and strumous diathesis, so common in children. The result has far exceeded my greatest expectation.

J. A. IRWIN, M. D.,
Late Assist. Childrens' Dept. and Assist. Gynæcological Dept. Jefferson College Hospital.

Well Known--Well Liked.

The other day, the superintendent of one of the largest city hospitals in this country, said to a representative of The Imperial Granum Company, the manufacturers of that reliable diatetic preparation, IMPERIAL GRANUM: "It is not necessary for your firm to send any one here to tell me about their product for I have used it in both private and hospital practice for over twenty-five years, and can hardly believe that even the youngest members of the medical profession do not know of the merits of this well known and well liked food for invalids and convalescents.

A Reason and a Relief.

It is the boast of Americans that no people in the world are as well fed as they. It is undeniably true that no nation is so much blessed with such wealth of food material as this. The present generation might be termed a race of indiscriminate eaters, and the problem of the busy practitioner to-day is not how to nourish the body but how to successfully relieve it of the effete

products of waste. To coin an axiom, we might say that the secret of good health is good drainage, not the drainage of land, but that of the body. The human body has been very aptly compared to a machine and the food which the average individual appropriates is the fuel which furnishes the energy to keep the machine in motion and repair. The complicated mechanism of the human body is more frequently disarranged by the incomplete combustion and consumption of the fuel furnished it than any deficiency of nutritive material. The resulting condition is both known and called by the profession and laity, constipation. To the physician it is the unfailing source of many complications. It is the incident and the accident, the cause and the effect of physical degeneracy. We may assert without fear of contradiction that none of the ills which flesh is heir to, is more intractable than constipation or is there one which baffles the skill of the average physician more. It is not surprising that the tendency on the part of the people to over feed and take too little exercise has its logical consequence in the prevailing custom of taking all sorts of pills and purgatives. A universal cathartic custom is abroad in the land. An indiscriminate use of cathartics cannot be too strongly deprecated because most of them hold their victims in such bondage by becoming progressivly inefficient. They not only deplete the system too rapidly, but the very griping which the most of them produce is a signal that an affront has been offered to nature. The retaliation is the pain, the resentment, a subsequent failure on the part of the abdominal viscera to perform their functions. An agent which would offer to the busy doctor the means of sweeping from the system all waste with the corresponding security against any of the objections which have been cited, would be a boon that would find a warm welcome and an intelligent application in his hands.

Such a remedy we believe exists in "Syrup of Figs." Many careful practitioners have reported that Syrup of Figs is not open to the same criticism as other cathartics. Its action is potent yet persuasive. It does not devitalize the patient by robbing the blood of its serum or by sweating the delicate mucous membrane of the intestines. It is a laxative pure and simple, and produces firm and full formed stools instead of watery evacuations. Syrup of Figs is as agreeable to the taste as it is satisfactory in its results. It can be employed by the conscientious physician with every assurance that its use is certain and safe and is not followed by any peristaltic paralysis on the part of the patient as it does not produce the subsequent inertia of the bowles common to other cathartics. It can be prescribed for women, children and people of sedentary habits as a reliable remedy which is maintained at a uniform standard of excellence. One that realizes the expectation of the doctor without doubt or disapointment.

Irregular Action of the Heart.

I take great pleasure in offering my testimony to the great value of Cactina Pillets, in cases of weak and irregular action of the heart. I have used them for four years and have never been disappointed in them. They not only stimulate the heart, but improve that organ permanently. I find them very useful in all cases of typhoid fever and pneumonia.

C. B. MATTHEWS, M. D.
Kent, Ind.

I have used Peacock's Chionia and find it very effective. I shall continue to prescribe it in my practice.

A. P. DALRYMPLE, M. D.
New York, N. Y.

TRANSACTIONS OF THE MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA.

EDITING COMMITTEE:

W. W. JOHNSTON, M. D., GEO. M. KOBER, M. D., JAS. D. MORGAN, M. D.

MEETING OF NOVEMBER 2, 1898. Dr. S. C. Busey, President, in the Chair.

MEMORIAL MEETING IN HONOR OF DR. NATHAN SMITH LINCOLN.

(Continued from January Number.)

REMARKS BY DR. J. W. H. LOVEJOY.

In my long membership in this Society I have assisted on many occasions like the present, but I cannot recall any which I have approached with deeper feeling.

The fact is now brought very sensibly to my mind that there are but few of us —a mere handful—now remaining who were members when Dr. Lincoln first came amongst us. Like a small remnant of a forlorn hope, the earth dotted around us with last resting-places of our former companions, we stand with the arrows of death flying thick and fast around us. We may indeed individually, at times, in our imagination, seem to see this great protagonist in the tragedy of life with his dart raised and pointed. He only delays to strike.

An eminent psychologist tells us that he has observed the old finding entertainment in a philosophical study of the evidences and causes of the gradual decline, the signs of which must be daily forced upon their attention. Doubtless we all know this from experience. The young think not of these things. Those who have attained unto their threescore and ten vividly realize that verily "The wings of life are plumed with the feathers of death."

Dr. Lincoln and I became acquainted very soon after his settlement in this city. We have been associated together in this Society and in the Medical Association ever since, and for nearly twenty years in the Board of Directors and Medical Staff of the Children's Hospital and in the Medical Staff of the Garfield Hospital from its organization.

Throughout my long intercourse with him I have found him to be a well-bred, courteous and cultured gentleman; invariably kind, considerate and affable.

As to his professional qualities it would seem useless to speak in this presence. He very early acquired a high rank in his profession, and was, for a long time, at its head in this community as a surgeon, but a few years ago he relinquished mainly the practice of surgery, retaining only the general practice of medicine.

In his intercourse with his professional brethren, he, as his character would indicate, has been always observant of the ethical requirements, and I have especially observed that whenever called upon to attend a brother practitioner he has been always singularly kind and benevolently assiduous in his attention, and in these, and all other consultations, exact and punctual in keeping his appointments.

For probably two years past I have noticed that Dr. Lincoln was failing in physical health, and for more than a year have observed his progressive and increasing feebleness, but up to the time of his last illness have noticed no abatement of his mental powers.

In the words of Chaucer :

"Than is it best, as for a worthy fame,
To dien whan a man is best of name."

We could not have fixed any such time for Dr. Lincoln, for he has, up to the last held the esteem and affection of those who knew him and constantly grown in respect and honor.

Dr. Murray :

The many things that have been said of Dr. Lincoln to-night I was prepared to recognize, although many of them were new. The kindliness and gentleness of his nature, I am fully prepared to acknowledge, and with gratitude, because I am one, and perhaps there are others here, who have felt it at times when it was most grateful. But there is one feature which probably from the circumstances of the interment was not observed except by me. The interment was private, the body was taken to St. John's Chapel, then to beautiful Oak Hill. Only a few persons present besides the family and pall-bearers, but around the gates of the cemetery a group of sorrowing ones, the poor and needy whom he had many times befriended, stood with grief-stricken faces and watched the last sad offices being performed for their friend, and I heard them say, "Our best friend is gone." Could there be a more touching tribute paid to any man than this?

Dr. Godding :

I may perhaps be permitted, as an old friend, though not associated with Dr. Lincoln in practice, to bring one sprig of forget-me-nots to lay on his bier. I have known him longer perhaps than any of you, we were boys together. I came to Washington in 1863 and found him already in a most extensive practice, respected and loved by all. I went away and returned in 1877 to find him standing at the head of the profession, a position which he most worthily filled. I never knew a man so free from quackery and sham and so little inclined to arouse hostile feelings or enmities on the part of his brethern. He was a thorough student and a gentleman in every respect, whole souled and generous. A little more than two weeks ago I sat in that church and heard that grand old burial service, "I am the Resurrection and the Life, and as we have borne the image of the earthly, we shall also bear the image of the Heavenly." I accepted the sublime lesson of beauty out of ashes and life out of dust. No, he is not dead, I said, but a good man is gone, and the voice replied ;—"A good man risen." I recall what Longfellow says so truly:

"Take them, Oh Death, and bear away whatever thou canst call thine own ;
Thine image stamped upon this clay doth give
Thee this, but this alone.
Take them Oh Grave, and let them lie forever folded on thy narrow shelves,
Like garments by the soul laid by, and precious only to ourselves.
Take them Oh vast Eternity, our little life is but a breeze,
That bends the branches of the trees and trail its blossoms in the dust."

And I say that no whiter soul looks down

to-night out of that star lit dome than that of Nathan Smith Lincoln.

Dr. W. W. Johnston :—

When I entered practice in Washington, Dr. Lincoln was in the full zenith of success, with a large practice, and for his age no man in Washington stood higher than he, certainly not in surgery, as he was the accepted surgeon of Washington. Shortly after I made my residence in the same block, I was called in to see Dr. Lincoln, who was suffering from onychea. He was attended by Dr. Ashford in consultation. An operation was done when he declined anesthetics, although the pain was unusually intense. He bore this bravely, and I was then struck with the courage of the man. This courage I noted all through my acquaintance with him, not only a physical but a moral courage. He bore all the pains and anxieties of a busy practitioner's life with unusual fortitude. In all his consultations with his fellow practitioners I can testify to his sound judgment. His manner was so courteous that one was forced to compliance with his views and suggestions. He had a strong hold on his patients, and their unwillingness to give him up after his physical power had failed was must pathetic. When age unfits us for work, the world falls away and friends are but few and far between. With him it was just the opposite, for the friends held on tighter to him as he grew older and more feeble.

Dr. Mary Parsons;—

"If not inappropriate, I should like to add my bit of Rosemary to the wreath of rare exotics which has been laid at the feet of our dear friend and brother to-night. Twenty-five years ago I came among you, a strange girl just out of school. Your doors were tightly barred against me, a modern Pariah finding no place, no welcome, no helping hand. Debarred from the privileges of consultation, without legal status, ostracized, I battled on. I fulfilled an obstetrical case which developed many complications. Wild with terror, my patient and friends terribly alarmed, I sent for Dr. Lincoln, hardly daring to hope he would come to my aid, for it was considered a misdemeanor for a man to meet a woman in consultation at that time. He came and relieved my fears, quieted and soothed my patient and her friends, and offered me the right hand of fellowship, when I thought every man's hand was against me. I did not know then what I know now that it was the inherent nobility of the man not to refuse the call for help from any being in need, and ever since, whenever I have called on Dr. Lincoln for help he has always given it to me with the same kindness and generosity of that early date. Excuse me for referring to those days so long back, days that are better forgotten, but I go back that I may bring this little bit of Rosemary to lay at his feet.

Dr. J. D. Morgan:—

"I am glad to see so large an attendance here to-night, it indicates the esteem in which Dr. Lincoln was held. Death has been very active in our midst, and many shining stars have been its mark. Dr. Lincoln has been a friend to the young physician. He was safe, conscientious and deliberate in advice, and when he gave it we felt that he gave it not only for the patient but for the physician. His interest in medicine and the profession kept pace with the times, and wonderfully apace of the times for his years. Men of his sort are becoming very rare among us, and his loss will not only be felt by the community, but the whole medical profession.

MEETING OF NOVEMBER 9, 1898.

The President, DR. S. C. BUSEY, in the Chair.

Dr. W. C. Borden, U. S. Army, was elected a "member by invitation."

On motion the President being authorized appointed the following Delegates to the National Pure Food and Drug Congress to be held in this City, Jan. 18th to 22d. 1899: Drs. Z. T. Sowers, W. W. Johnston, C. H. A. Kleinschmidt, G. L. Magruder and George M. Kober.

MYOMECTOMY.

Dr. J. Taber Johnson presented a specimen of a large fibroid tumor removed by the operation of myomectomy, and stated that he had presented a number of specimens of fibroid tumors, removed by a more or less complete hysterectomy on former occasions. The latter operation of course requires the removal of uterus, ovaries, and tubes along with the tumor, which makes childbearing forever impossible. When the presence of a growing fibroid tumor however had threatened the life or health of a patient by its symptoms of pressure and hemorrhage he had heretofore advocated supravaginal hysterectomy. He took great pleasure in presenting this specimen of tumor which had wrecked the health of its possessor and which he had completely removed by a process which left the uterus and one ovary and tube in the condition permitting the future undisturbed exercise of their natural functions and he considered it better surgery, as well as a very long step toward the perfection of an ideal operation, in which the offending tumor or tumors could be removed and the function of the organs left undisturbed. He thought physicians in general would more frequently recommend, and women in general would more frequently consent to the performance of an operation which would not unsex them. Many operators were now reporting succesful operations of this kind and he felt that abdominal surgeons should be congratulated upon this very conservative method of operation for this class of troubles. The patient in question was sent to his Private Sanitorium by Dr. O'Brien of Alexandria, and the operation had been performed six weeks previously and the patient had made an uninterrupted recovery and had already returned to her home.

DISCUSSION.

DR. REYBURN. A great many women have been mutilated by the removal of the ovaries and uterus for fibroid tumors. But I think this case opens up a field that shows tumors can be removed without destruction of the ovaries. Dr. Kelley has written an article on this recently, stating that the operation can be performed successfully and the ovaries left intact. Where the tumor involves the uterus hysterectomy must be performed.

DR. BOVEE. A case under my hands a short time ago demonstrates what I have to say. It occurred at Johns Hopkin's Hospital in Baltimore about a year and a half ago, patient a maiden lady about 43 years of age. Abdomen opened and tumor removed. Small fibroids felt in the uterus, thought they would not give trouble. She came to me some months later on account of pain through the pelvis, and with the uterus nearly in the same condition as before described. I performed hysterectomy and she was relieved. This should have been done first and thus saved suffering to the patient. In many cases where there are three or four fibroids we cannot tell how many are in the uterus. In another class of cases, I have performed hysterectomy for suppurative disease and found the uterus contained fibroids. They could not be detected at the time by palpation. The dangers after myomectomy are greater than after hysterectomy, as it is always more or less difficult to stop the oozing. Careful sutures are necessary. Even the smallest openings will bleed. I have

lost cases in this way. It requires careful consideration before deciding upon myomectomy in preference to hysterectomy.

Dr. D. L. Lamb presented the following pathological specimens:

(1.) *Ulcerative endocarditis.* The heart is slightly enlarged and dilated, weighing 14.5 oz.; both aortic and mitral valves show vegetations and two aortic leaflets are ulcerated. Spleen is rather smaller than normal, probably the oncoming atrophy of age; weighed 5.5 oz.; it shows several large embolic areas some of which appear as whitish granular masses. The patient was a colored man age 50 years who was in Freedman's Hospital a short time. With the exception of occasional nosebleed the reason of which was not apparent, he had had good health; his father was said to have died with some kind of heart disease. I made the necroscopy and in addition to the lesions of heart and spleen there were small hemorrhages under the pia mater of the frontal region of the right cerebral hemisphere. Nothing else of interest except old tubercular deposits of right lung with cicatricial patches on corresponding pleura; another illustration of healed tuberculosis.

The endocarditis in this case was certainly due to microorganisms as indeed it usually is. The abscess lesions of the spleen as well as the sub-pial hemorrhages are metastatic, due to the washing away of infecting fibrin from the valves of the left heart; these particles caused embolism of the arteries in the brain and spleen, probably in the spleen first since here were abscesses while in the brain the lesion had gone no farther than hemorrhage; if the patient had lived longer these hemorrhages would have probably become abscesses; the entire illness covered just about five weeks. How the microorganism entered the blood remains an unsolved problem since the lungs showed no sufficient lesion and the right side of the heart was normal. Just which particular organism was the cause of the lesion was not determined. In this connection I may refer to a recent report made by Harbitz, of a three years' pathological and experimental study of endocarditis.

He has found that the infectious form is much more common than is usually thought. Most cases are caused by the ordinary bacteria (staphylococci, streptococci and pneumococci) but the course and pathological picture vary with the character of the organism. Where the staphylococcus is the infecting agent, he found the classical symptoms of pyemia with rapidly fatal course; and with multiple metastatic pus foci, and often also a local pus focus. The course is more chronic and there is some tendency to recovery when the infection is mixed, namely streptococcus and pneumococcus; in these cases he rarely found the point of original infection, the infractions were not infectious and there were no purulent foci; but a toxic infection was shown by some organs as for example a nephritis. Endocarditis is also sometimes due to the gonococcus. It is questionable if tubercle bacilli can cause endocarditis. In certain cases of chronic endocarditis bacteria were not found; but the similarity of the symptom-group to that of infectious endocarditis, seemed to leave no doubt that the cases were due to infection.

The process usually begins as a necrossis of endothelium; but may also be caused by bacterial emboli in the vessels of the valves.

He believes that some cases of rheumatism, with endocarditis, must be regarded as due to infection although so far no definite organism has been found to be the cause of rheumatism.

(2.) *Fatal Needle Puncture of the Heart.*

A very light colored boy 13.5 years old had gone to the country near this city to stay with some friends and help with the dairy and other work of the place. One day, July 8, 1898, while attempting to climb a fence, a needle which he had stuck in his jacket, was forced into the front upper part of the chest. He pulled it out as he thought, but as the sequel showed it had been broken in two and he withdrew only the blunt portion, the other remaining. He made very little complaint and went on with his work until, on the morning of the second day he showed signs of fainting, had more marked soreness and increasing difficulty in breathing. He died in the afternoon about two hours after the appearance of distinctly alarming symptoms. On account of the suddenness of the boy's illness and death Drs. Wilder and Francis, who saw him just before his death thought the case a proper one for the coroner to inquire into. Dr. Carr made the inquiry and concluded that a necroscopy was unnecessary believing that the boy had died of some ordinary heart trouble. The father however came to me and asked me to make an examination. Nothing was said to me of the needle accident until I had actually found it in situ; so little importance was attached to it. The needle had penetrated the chest wall just to the left of the left margin of the sternum, obliquely, between the second and third costal cartilages; passed through the thymus, gland which is still large and is shown in the specimen, and projected freely 1-4 inch in the pericardial sac. This brought it in contact with the heart just below the pulmonary orifice of the right ventricle. Gradually a hole must have been torn through at this point, because the opening which I found there is quite ragged, is mainly in a vertical direction corresponding to the heart movements, is 6-8 of an inch long from above downwards, on its pericardial side, and 1-8 inch in same direction on endocardial side; a conical opening which a needle in such position might be expected to make; the width of the opening varied at different points. The heart was otherwise normal. The pericardium was distended with blood and recent clots. The needle was blackened from oxidation by the blood. All other organs were normal. There was no external mark showing where the needle had penetrated. Doubtless there had been a slight one but when I saw the boy it had disappeared.

While many needle punctures of the heart have been reported, some of which were speedily fatal and others were recovered from, wholly or partially, I think that this case taken as a whole is rather novel. The apparent slightness of the injury delayed surgical attention until a fatal hemorrhage had set in. Suggestions of foul play, poisoning, etc., had been made as is so often done in these sudden and obscure fatalities. These justified the desirability of an examination; as indeed even more so, did the results of the examination itself.

DISCUSSION.

DR. FOSTER. Reported a case of suicide at St. Elizabeth's. The patient had stuck a darning needle into himself so that it perforated the apex of the heart and passed the entire length. It was two inches long but did not appear externally. The man had been his patient but three months. No one knew how long the needle had been there. He could not have put it through the whole length at the start and it must have worked its way through. There was considerable myocarditis and blood.

DR. LAMB. It seems that this is a

case which suggests difficulty in diagnosis, and I have wondered whether any operation would have been possible to have relieved the boy, if they had suspected the needle was there. I could see nothing of the needle from the outside, and it was only after I found the needle they told me of the occurrence; this needle went through the left side of the sternum and thymus gland 1-2 inch before it reached the perieardium.

POLLUTION OF THE POTOMAC RIVER.

By Robert Reyburn, M. D.

While on a visit to the City of Cumberland, Maryland during the months of August and September 1898, the writer had the opportunity of examining the condition of the Potomac River Water at that City; its color at that point when seen in mass, is of a blackish brown, when run into a bath tub for purposes of ablution it is of a pale claret, and when poured into a bottle it is greenish yellow. As you go farther up the River towards the Paper Mills, Piedmont, Maryland the color deepens, and all the stones in the River are covered with a yellow earthy deposit. The taste and odor of the water are repulsive, it is absolutely unfit for drinking purposes, and only very imperfectly subserves the purposes of washing and cleansing. This Pulp Waste also kills the fish of the Potomac River.

The people of Cumberland in fact cannot drink it, and are compelled to resort to the use of cisterns which are used as reservoirs for their supply of drinking water, which is collected during the rainy season from the roofs of the houses. It is only drank by those who are too poor to pay for the cisterns.

The chief of the many causes that contribute to the contamination of the Potomac Water, is the existence of a large Paper Mill for the manufacture of Paper from Wood Pulp located about thirty miles above Cumberland. These Mills I am informed disintegrate the wood pulp by a process which consists largely in the admixture with it of Sulphurous Acid and Lime. These agents disintegrate the woody tissue and free the Cellulose in a form fit for its use as paper. The fluid mass consisting of about 300, 000 gallons per day resulting from this process, without any attempt at separation or purification, is poured into the Potomac River at Piedmont, thus contaminating the water at Cumberland, and the many villages and towns located on the Potomac between Cumberland and Washington, D. C.

But as far as the inhabitants of our Capital are concerned this is not the only cause of pollution. The citizens of Washington not only drink the waste of the Paper Mills at Piedmont, but all the sewage of Piedmont, Cumberland and all the many towns located on the banks of the Potomac, for the one hundred and seventy miles through which the Potomac flows from Piedmont to Washington. Fortunately however for the citizens of Washington, a partial purification of the Potomac River takes place by its admixture with the Shenandoah River at Harpers Ferry, West Virginia. The Shenandoah River flows through a limestone country and the salts of lime contained in it probably precipitate a large portion of the impurities of the contaminated Potomac water. During the course of the flow of the Potomac River also the Sulphurous Acid existing in the Wood Pulp waste probably becomes oxidized into Sulphuric Acid and combining with the lime present, precipitates in the form of Sulphate of Lime, which is nearly insoluble in water.

This partial purification does not remove from it the most dangerous contamination namely the poisonous Bacteria, and Germs of Typhoid Fever, and other Diseases, which are found in immense numbers in the Sewage, which is so abundantly poured into the Potomac River.

The history of the Paper Pulp Mills of Piedmont, Maryland, is one of the most striking examples that can be given, of the utter disregard for the health and lives of their fellow citizens by men who care nothing what becomes of others, so that they can make money.

The Piedmont Paper Mills were started about ten years ago originally on a very small scale, but now employ a large number of hands and occupy an extensive and valuable plant.

It must not be supposed that the people of Cumberland have not resisted these encroachments upon the purity of their water supply. After trying remonstrances in vain and also failing in appeals to Maryland State Board of Health, they resorted to legal proceedings to enjoin the owners of the Pulp Mills from contaminating the Potomac Water. The suit finally came to a trial in December, 1897 and after an obstinate, and bitter defence by the defendants, a verdict of guilty was rendered against the owners of the Paper Pulp Mills, on December 24, 1897.

Finally how can this condition of the Potomac River drinking water be remedied? As far as the Piedmont Paper Mills are concerned this can be done by two methods, the first of these is to treat the Paper Pulp Mills waste by chemical agents which will convert and precipitate the Sulphurous Acid and Lime in the shape of Sulphate of Lime. The other and preferable method is to distill off the water from the pulp waste and thus convert it into a semi-solid material, which can be removed and deposited far from the Potomac River. Of course either of these methods will entail a considerable amount of expense to the owners of the Paper Pulp Mills, but it will we think be universally admitted, that no man has a right to make money at the expense of the health and lives of our Citizens. The question of how to prevent the sewage pollution of the Potomac River Water from Piedmont, Cumberland and all the towns which line the banks of the Potomac, from thence to Washington, D. C. is a much more difficult and troublesome question.

It is my deliberate opinion, that whilst we may palliate and diminish this great evil, by other means, yet the only radical and thorough remedy (as far as the Citizens of Washington are concerned) is to establish a Filtration Plant near Washington capable of filtering and purifying the supply of water required by the Citizens of the District of Columbia. The alarming and steady increase in the death rate from typhoid fever in Washington which has occurred during the past ten years is no doubt very largely due to the contamination of the Potomac River Water by the sewage which flows into it from every town and city situated on its banks.

As these cities and towns increase in population the pollution of the Potomac drinking water, that we receive in Washington will inevitably increase and this condition of affairs demands prompt and speedy action. The filtration and purification of the entire water supply of Washington, can be done just as thoroughly and effectually as it has been done in Hamburg and Berlin in Europe, and also in Lawrence, Massachusetts, and many other cities of the United States.

THE USE OF ANTISTREPTOCOCCIC SERUM IN PUERPERAL SEPSIS.

By Henry D. Fry, M. D.

The happy results of the use of diphtheria antitoxin, and even more significantly, of antistreptococcic serum in erysipelas, led to the employment of the serum in puerperal sepsis. M. M. Charin et Roger injected the serum into a woman suffering from puerperal sepsis at the Paris Maternity, February 6th., 1895. The first injection of 8 cc produced no appreciable effect, the second, on the succeeding day, was followed by slight improvement and the third dose of 25 cc, on the next day, resulted in rapid improvement and subsequent convalescence.

The report of this case stimulated investigation in all directions. The experience, unfortunately, has been very conflicting. Some cases yielded like magic; others were uninfluenced; and others again seemed to grow worse under the treatment. I have been able to collect in all 119 cases treated by the serum. 77 were cured and 42 died. The mortality of 35 per cent is higher than under modern antiseptic treatment. However, this must not be used as an argument against its value. First we should consider that, as a rule, only the worst cases of sepsis are subjected to the serum treatment. The milder infections yield to local means and are not subjected to serumtherapy. The serum is reserved for the desperate attacks and the patients are sometimes past all hope when it is used as a last resort. Again, many of the cases are not suitable for this method of treatment at all. Antistreptococcic serum is of no value in any kind of infection except that produced by the streptococcus. A bacteriological examination of the uterine secretions is therefore necessary to determine the variety of infection. Fever resulting from the staphylococcus, the colon bacillus or saprophytes should be excluded from consideration. We must also take in view the stage of infection at the time the method is begun; the quantity injected, and the reliability of the serum. Many firms place their products on the market and we fear some are not reliable.

Wishing to ascertain the views of investigators on the value of serum injections in streptococcic infection, I wrote to a number of prominent men. Of 49 replies, 30 had had no experience with the method; 14 were favorably and five unfavorably impressed with its use.

Some of the individual opinions were as follows:

Barton Cook Hirst—Has no faith in its present use. Has used it two years—would not refuse to use it.

R. C. Norris—Would use it in all known cases of streptococcic infection at the earliest possible moment—using a reliable serum. Never employ serum when general infection is about to destroy patient.

P. F. Munde used it in consultation in three desperate cases and was pleased with the effect. H. J. Boldt has given serum a thorough trial in puerperal fever and sepsis from other causes. He had practically negative results. Some cases improved, but they were so mild that recovery would have taken place without any treatment. E. P. Davis—"I have seen total failure with the use of the antistreptococcic serum in puereral infection and also apparent success follow its use. It is indicated in my judgment in patients where thorough cleansing of the birth canal, flushing and drainage of

the peritoneal cavity with free stimulation do not cause improvement. It should be used repeatedly and for effect only, without regard to dosage." E. H. Grandin—"If the case be one of pure streptococcic infection and diagnosis reached early, serum may be of benefit and would use it. As a rule, however, the sepsis is of a mixed type, and if lymphatic lesions are extensive it is too much to hope for good from serum. If it is a question of serum plus surgery and the case recovers the latter is entitled to the credit." E. P. Reynolds—Serum seemed to control chills in a very late case though result was fatal.

These discrepant opinions but echo the situation as it stands represented in recent medical literature. Personally I believe these serum injections have a limited field of application.

First the variety of infection must be that produced by the streptococcus.

Second, the stage to which the infective process has progressed is more important than the early or late use of the serum. In some varieties general systemic infection occurs early, in others the process seems circumscribed by inflammatory lesions and the resulting systemic reaction being due to toxicæmia. The latter cases explain the prompt response to the serum injections when delayed fourteen and twenty-four days. After the streptococci have penetrated the blood and lymphatic circulation the time is past to use the serum with benefit.

Streptococcic infection is the most frequent variety occurring after childbirth. Uterine infection begins early and is generally of severe type. Infection of the vulva or vagina is usually manifested clinically about the third or fourth days of the puerperium.

Chilly sensations, or a rigor, ushers in the disease. High and erratic temperature excursions; weak heart's action, and general systemic depression are indications of streptococcic infection. Exceptionally the disease may be manifested by slight general disturbance and by intense local inflammation with pseudo-membranous deposit upon the mucus surface of the genital canal. The lochia is generally suppressed at first; then mucopurulent and odorless. Odor occurring late in the attack indicates necrotic changes in the tissues involved. Occurring early, points to the retention of effete material and the presence of saprophytes. In the latter class of cases curetting and cleansing the uterine cavity is clearly indicated. Constitutional disturbances in these cases is sapræmic, or due to mixed infection.

The diagnosis of streptococcic infection must depend upon the history of the confinement; the clinical history of the case, local and general; and upon the bacteriological investigation of the uterine discharges. The method of obtaining these discharges, suggested by Dr. Whitridge Williams is as follows:

"When cultures are to be made the hand should be sterilized as for a laparotomy, and the patient's external genitalia washed thoroughly with soap and water and then soaked with a 1-1000 bichloride solution, and all instruments boiled for at least ten minutes.

The patient is then placed in Sim's position, a large Sim's speculum introduced and the anterior lip of the cervix seized with bullet forceps and brought down as near as possible to the vuva.

The external os is then carefully wiped off with sterlized cotton, and the small tube taken from its container and intro-

duced up to the fundus of the uterus.

A large syringe, which drains well, is attached to its free end, and on making suction more or less lochia is aspirated into the tube, which is then removed from the uterus, and both ends of it carefully sealed with sealing wax, when it is replaced in its container and is ready to be taken to the laboratory for examination. By nicking it with a file it is readily broken, when cultures and cover slips are made."

The injection of antistreptococcic serum should be administered daily—preferably in the evening. It has been employed every six hours. The initial dose should be from 5 to 10 cc. The effect of injection should be carefully watched; the pulse and temperature record giving valuable information for good or bad. Large doses may be demanded in desperate cases. If the remedy will be of benefit, some favorable change is usually manifested after the first few injections. Recurrences are common in all forms of streptococcic infection, consequently the serum injections should not be discontinued too soon.

Fatal cases attributed to the use of the serum have developed a rapid pulse, low temperature and uncontrollable vomiting.

While using seruntherapy, general sustaining and local antiseptic treatment must not be neglected. Careful discrimination should be exercised in the use of local treatment. The curette, I believe, has done much harm in streptococcic infection. It is strongly indicated in sapraemia to remove decomposed material, but it is not proper in streptococcic infection except in the latter stages to remove necrotic tissue.

THYROID EXTRACT IN UTERINE FIBROMATA.

By Henry D. Fry, M. D.

The use of animal extracts originated with Brown Sequard's proposal to treat impotence with testicular juice. The idea is old. Pliny, quoted by Dr. Meltzer, states that the Greeks and Romans ate the testicle of the donkey as a remedy for impotence. The most striking evidence of the value of animal extract in the treatment of disease is found in the published reports of the use of thyroid in myxœdema. The extract of the thyroid gland has also been employed in obesity, tetany, mental and skin diseases, and finally in uterine hemorrhages due to various causes, including fibroid tumors. In the latter case reduction of the tumor has followed its use as well as cessation of hemorrhage.

In May 1896, Dr. Robert Bell of Glasgow called the attention of the profession to the subject in a paper read before the British Gynecological Society entitled—"The Treatment of Carcinoma of the Uterus, Certain Forms of Ovarian Disease, and Fibroids of the Uterus by Means of Thyroid, Parotid and Mammary Gland Therapeutics."

Dr. Polk of New York, reported favorably on the use of Thyroid in cases of bleeding fibroid, in a paper read before the Baltimore Gynecological Society, October, 1897.

Dr. Wm. E. Mosley reported his experience in five cases observed at the Maryland General Hospital with encouraging results.

This report together with one of Dr. Shober, of Philadelphia, on "Extract

of Mammary Gland in the Treatment of Fibroids," came up before the meeting of the American Gynecologial Society, in Boston last May. In the discussion which followed, Dr. Mann of Buffalo, Dr. Duer of Philadelphia, Dr. Malcolm McLean of New York, and myself, reported cases treated by thyroid extract.

Dr. Mann said: "That he had tried Thyroid extract of fibroids in about a dozen cases. In one or two large fibroids it had no distinct effect except in the way of improving general health. In about ten cases of small fibroids there had been a decided benefit from the use of the extract. In only one case had there been any unpleasant effect. As a rule the hemorrhages had decreased and the tumors decreased in size. In one case a small tumor had apparently disapeared and all the symptoms referable to it had been relieved. He felt very greatly encouraged with this experience."

Dr. E. L. Duer said that he had used the thyroid extract in 13 cases of uterine fibroids, but only six were worthy of mention as having been sufficiently long under observation. Each patient received five grains of Mulford's thyroid extract, and all other treatment was suspended. In 2 cases, after its administration for about two weeks, the dose had to be decreased, and eventually suspended, because of an individual susceptibility to the drug. He could not say that he had secured better results than from other medicinal treatment except in one case of subserous fibroid of the left anterior aspect of the uterus, the tumor extending six inches above the pubes. She was given, Feb. 25, five grain doses of the thyroid extract. On April 4th, the tumor was found to be only two and a half inches above the pubes, and on May 14th, the tumor was scarcely discernable by the most careful examination.

Dr. Malcolm McLean said that he had been using thyroid extract systematically since October 1897. He had found that in three cases it had absolutely controlled the hemorrhage, and in two had markedly reduced the size of the tumor. Three out of eight cases had been sufficiently long under treatment to make the results of some value. He had been favorably impressed with the remedy.

I will only add that I have since had other cases using the remedy and it acted well in checking menorrhagia. Two failed to obtain relief and the uterus has been removed by hysterectomy.

In conclusion I will ask of my professional friends the favor of being granted any opportunities that may occur in their practice to investigate with them the use of either the antistreptococcic serum in puerperal or surgical sepis or of thyroid extract in bleeding uterine fibroids. I can furnish a limited amount of the serum or thyroid extract to such cases as may be unable to pay for it.

DISCUSSION.

Dr. Pool cited the reports of various bacteriological examinations made to discover the nature of the infection. He thought it impracticable at the present to make a satisfactory classification of the results of infection from a clinical standpoint, but would divide the organisms into pyogenic and putrefactive. The virulent forms of the disease were generally due to the streptococcus more rarely to the stapylococcus; the putrefactive is most frequently due to the colon bacillus, although other organisms and the mixed infections must be remembered.

The pyogenic germs may advance through the tubes, the veins, or the lymphatics, giving us three classes of cases from a pathological view. He stated some of the rules for differentiating streptococcus from putrefactive infection. The treatment varied with the class of cases.

In conclusion he believed that we have one class of cases in which comparatively simple treatment will save the patient another (acute puerperal streptococcic lymphango-peritonitis) in which with any treatment so far employed the vast majority will die, while between these extremes we meet with cases of mixed infection and complicated pathological conditions which are worthy of our most earnest consideration.

Dr. Moran said three cases of puerperal sepsis have been treated in Columbia Hospital with the anti-streptococcus serum during the past 3 years with negative result. We cannot determine the value of the serum in streptococcus cases if we use local measures. It is necessary to make a distinction between saprophytic and pathogenic infection. In the former, the germs lie upon the surface and give off toxins which are absorbed, hence douches are of service. In the latter however, the germs penetrate at once into the organisms beyond the reach of local treatment.

Meeting of November 16, 1898.

The President, Dr. S. C. Busey, in the Chair.

Dr. Geo. M. Kober offered the following Resolution, which on motion of Dr. A. F. King was laid upon the table. Resolved:—That the Medical Society of the District of Columbia extends an invitation to the Obstetrical and Gynecological Society, the Clinco-Pathological Society, the Medical and Surgical Society and the Therapeutic Society to hold occasional joint meetings, and requests the appointment of a Committee of three from each of the Societies thus invited to confer with a similar committee to be appointed from this Society to meet Wednesday evening, November 30th, in this building for the purpose of arranging the details for such joint meetings.

Dr. Glazebrook presented the following pathological specimens:

(1.) *Anomalies in the Blood supply and the Ureters in both Kidneys.*

R. J. C. aet,. 73 died suddenly after a protracted debauch. Autopsy revealed a tubercular lung with cavities, hypertrophy of the left ventricle with aortic and mitral insufficiency due to atheromatous valves, pericarditis with adhesions binding the heart and pericardium tightly together; the heart weighed 23 oz. Special interest however attaches to the anatomical anomalies found in the kidneys. First we notice that the size of the organs is larger than normal, the color is also abnormal, there is an absence of the markings in the cortex, the capsule instead of being adherent was very movable, and macroscopically there is an increase in fat. Looking at the organs from the outside there is an absence of the pelvis. In the right kidney the common ureter is formed by three smaller tubes, in the left by five. Apart from this anomaly you will notice that besides the normal renal vessels normally situated, we find in the right kidney a distinct artery entering the upper portion of the kidney and in the left an artery entering the upper portion of the kidney and an artery and a vein in the lower portion. Both arteries are distinct branches of the abdominal aorta. The subdivision of the ureter and the increased and unusual blood supply are anomalies of special interest.

Dr. Carroll's Report :—"In the pyramidal portion of the sections the intertubular connective tissue is very much thickened (cirrhotic change) there is however no arterial change. The tubu-

lar epithelium is granular in places and in others swollen and desquamated, many of the tubes contain casts. Some are dilated and filled with coaguluted albumen. The glomeruli are swollen so as to fill the capsules which are moderately thickened. The capillaries of the tufts are engorged and show much cellular proliferation. The epithelium of the convolution tubules is swollen, cloudy and granular and many of the nuclei have disappeared. The intertubular substance gives the appearance of an oedematous infiltration. The structures in general are swollen and closely packed and flattened as if by compression; a few glomeruli have undergone fibroid obliteration. The tubes appear plugged with epithelial material which has undergone hyaline changes. This only appears in part of the section.

DISCUSSION.

DR. BOVEE: "Anomalies of the kidney are more common than in any other organ of the body. There are often 3 or 4 sections, and the blood supply in such cases liable to be split up. This is more common on left side than right. There are a number of cases where the ureter is split part of the way down to the bladder. They are very interesting from a surgical standpoint."

DR. KLEINSCHMIDT: "Is not the case of the kidney that appears in several sections an embryonic kidney? A cow shows a kidney composed of a number of sub-divisions, and I think in the human being this may sometimes occur.

(2.) *Tubercular Abscess of right Lung.*

F. B. aet 67 U. S. Soldier died October 12, 1898, marked emaciation. Upon section unusual toughness in cutting through the ribs on the right side was observed, the left lung was markedly distended the organ appearing at least twice the normal size, heart and mediastinum were displaced to the right side. After removal of the left lung, examination disclosed the fact, that the right chest contained a pint of thick almost caseous purulent fluid. The right lung was actually wanting but at the situation where the large bronchi and vessels enter the lung, there was a broken down, hardened fibrous appearing mass about the size of a small orange. Upon examining this mass no lung tissue could be found. The chest wall appeared like any ordinary abscess cavity, but instead of the usual pyogenic membrane there was an osseous membrane strongly attached to the ribs and interspaces.

Dr. Carroll's Report:—"Upon macroscopical examination the specimen presents the appearance of bone, but upon microscopical examination it is found to consist entirely of non-nudeated fibrous tissue. Besides this there is broken down mineral substance. This condition might be called a chronic pyogenic membrane."

Dr. Lamb:—"I learned from Dr. Glazebrook that the plate of fibrous tissues as reported by Dr. Carroll after microscopical examination, contained in the recent state calcareous matter. I would say that these plates of chalky matter are now and then found in old adhesive pleurisy and pericarditis, and are of course degenerations of the new connective tissues which had resulted from inflammation. I think this was a case of empyema of long standing, in which the exudate had more or less dried up leaving much cheesy material. Such cases are found now and then in which tuberculosis may not play any part. If tubercular deposits are found elsewhere, the probability of the empyema having been tubercular seems better sustained."

Dr. Glazebrook:—"Most of the glands

were tubercular. I agree with Dr. Lamb as to old pleurisy having been present for I never saw a case where there was so much calcareous deposit as in this. Generally these deposits are in small plates, not in a solid sheath as in this case."

(3) *Dentigerous or Dermoid Cyst of the Ovary.*

S. M. aet 27, colored, died October from the effects of a gunshot wound of the brain. Upon autopsy the left ovary was found to be enlarged and oval in shape, about the size of an ordinary hen's egg. Upon section about two drachms of a jelly like fluid escaped ; the ovarian structure had been destroyed. In the bottom of the cyst was found a perfect incisor tooth, imbedded in a fibrous like mass having in part the appearance of a gum. Most authors agree that teratomata are primarily congenital and benign and that their living membrane resembles more or less perfectly the normal structure of the skin squamous epithelial cells, sweat and sebaceous glands, hair follicles etc. Dermoid cysts involve the ovary more frequently than other organs, although they have been found in the testis and other organs.

Dr. Carroll's Report : "A section taken from the base of the tooth presents the following microscopical structures. First, stratified squamous epithelial cells ; beneath this is a layer of rather dense fibrous tissue moderately rich in cells, this contains young hair follicles and an occasional sebaceous gland. This layer is supported in places by a cellular tissue rich in fat cells. In other places it is separated from the layer of cellular tissue by large coiled tubular glands similar in structure to the sweat glands of the skin. These glands are hypertrophied and their basement membranes are much thickened. These are the only structures apparent in the section and there is no evidence of the presence of muscle, bone or any other tissue that is not normally present in epithelial coverings of the body."

Dr. Lamb : "The specimen is very interesting. The report of Dr. Carroll shows however that the cyst is quite distinctly a dermoid. So far as I know the term dentigerous is applied only to those cysts of the jaw which are developed in connection with the teeth ; and in which teeth more or less rudimentary are found. I think the integumentary structures named by Dr. Carroll are not found in these dentigerous cysts which indeed are said to be quite rare.

Dr. Glazebrook : " In support of the the word 'dentigerous' I wish to say that it has been referred to in this way by the best authorities. I have shown the specimen to several dentists and all agree that it has every appearance of a perfect incisor tooth and gum."

(4) *Ruptured Spleen.*

A boy 10 yrs. of age had been ill for several months suffering with malaria, was up and about, although very feeble ; in entering his yard, fell lightly against the fence, striking his left side, the blow was described as being very slight. He was promptly removed to the house and died in a few moments. An autopsy disclosed a spleen, greatly softened, pulpy and weighing about XIX ounces, there was a rupture of about 2 in. extent, there was a large hemorrhage, with almost immediate death. The case illustrates the importance of carefully managing these cases of enlarged malarial spleens and also shows us that death may take place in a few moments, even before medical aid can be secured.

Dr. W. P. Carr presented the following pathological specimen :

A Case of Ruptured Spleen. Operation. Recovery.

Fred Acton a white boy, 10 years old was brought to the Emergency Hospital about 8 P. M., Oct. 11th, 1898, four hours after having been kicked in the left side by a mule.

He gave a history of chronic malaria but showed no marked signs of the cachexia. He complained of pain in the hypochondriac region and his abdomen was rigid and tympanitic, pulse 100; temperature 101° F. His general apperance was so good that I could hardly believe that he had any serious abdominal injury, and I decided to await developements. Injury to the pleura and diaphragm was suspected from the situation and character of the pain. Next morning he seemed better. Pulse 96. Temperature 100. His abdomen was however still rigid and tympanitic and about noon his pulse suddenly went up to 130 and his temperature to 103° F.

I at once opened his abdomen in the median line above the umbilicus and found the spleen, which I present for your inspection, much enlarged and badly ruptured, almost torn in two as you will see.

The abdomen was filled with blood clots and bloody serum, and as soon as the tension was removed by opening the abdomen and withdrawing the distended stomach a very severe hemorrhage began from the ruptured spleen. This organ was at once drawn out of the wound and after clamping and separately ligating the vessels it was removed.

The abdomen was cleansed and closed.

The patient made a good recovery.

Dr. Wallace Johnson made examinations of the blood which are interesting and which he will give.

DISCUSSION.

DR. WALLACE JOHNSON: "A microscopical examination of the spleen shows extremely small variation from normal spleen structure. Principal difference in the large amount of pigment scattered throughout the pulp in very fine granules and collected under the capsule. The history of the case, and finding of numerous malarial crescents in patient's blood, leave no doubt that it is a malarial spleen. Not enough time has passed since the removal to find many blood changes. Four counts have been made. Those of November 8 and 15 are given as follows:

Nov. 8.	Per cent.	Nov. 15.	Per cent.
Hemoglobin	55		60
Red Cells	2,900,000		3,100,000
Leucocytes	10,200		11,200
Differential count of leucocytes.			
Small lymphocytes	13.5		25
Large lymphocytes and transitional	21		17.5
Polymorphonuclear ventrophiles	62.9		42.5
Eosiophiles	2.6		15

You will notice the changes in the blood cells are only those of an anæmia of high grade, such as would be expected after the tremendous hemorrhage from the spleen, as described by Dr. Carr.

Results of the differential counts of leucocytes are more interesting. Here we notice a decided increase over the normal in number of large lymphocytes and eosiophiles. The increase in eosiophiles on the 15th, over those of the 8th, is particularly noticeable. According to Cabot an eosiophilia may occur, among other conditions in chronic malaria and in diseases where there is an increased function of the bone marrow. Is this then an eosiophilia due to the chronic malaria which the patient had and still has (for on the 15th, blood still contained a number of crescents), or is it due to increased amount of work thrown on bone marrow by absence of spleen? Regarding the latter view, Stewart's Physiology, just published, contains a statement that the spleen forms blood only in cases of extreme emergency, as after severe hemorrhage. Here we have the emergency, but no spleen, so the bone marrow may be called on for such additional work that the eosinophiles escape in unusual number into the circulation. Probably the chronic malaria is an additional cause. Cabot says the large lymphocytes according to the old view are formed in the spleen, but modern physiologists no longer believe this, and this case certainly substantiates this, for nearly three weeks after extirpation of the spleen we find them present in about four times the usual number."

Continued in March number.

THE

NATIONAL MEDICAL REVIEW.

VOL. VIII. WASHINGTON, D. C., MARCH, 1899. No. 10.

Original Articles.

NEURASTHENIA AND SUICIDE.

By FRANCIS B. BISHOP, M. D.,
Washington, D. C., President, American Electro-Therapeutic Association.

When we consider seriously the term, Neurasthenia, or nerve exhaustion, we know that it means fatigue of nerve centres and exhaustion of those centres in the brain and spinal cord, that receive and transmit motor and sensory impressions, as well as the impressions of special senses. We know also that these nerve centres, from some cause, probably a disarrangement of their atoms or molecular elements, frequently pervert the impression received, and consequently, the result is abnormal function.

This condition may be produced by any local irritation acting continuously through the sympathetic system upon the brain and spinal centres,—by prolonged illness, by la grippe and by retained toxic elements in the blood that should be eliminated by the kidneys or bowels,—severe mental or physical shock, great disappointment, &c. The disease often simulates grave organic disease, and often, only by the most careful and rigid examination, can the latter be excluded.

The patients suffer mental torture nearly always, and very often physical suffering is added to make their misery complete. The condition is most generally found in very enlightened, well educated and refined people, and very often a superficial examination will reveal little upon which to base a diagnosis. The patient is often sensitive, and his obscure obscessions (which are nearly allways present in some form) are only discovered by the most careful and diligent questioning. The consequence is that physicians in their honest efforts to relieve their patient's mind, will tell them that they can find nothing the matter with them, and advise them to use their will power, and that they will soon find their troubles will disappear; but they do not disappear, and the patient becomes more and more despondent.

These cases require time and patience, and when carefully and properly handled, the great majority of them yield perfectly and readily to treatment. Dr. Beard, in his works on Neurasthenia, says:—"As a disease, it does not tend to a fatal termination, but on the contrary, those so afflicted may count on a reasonably long life." My impression is that Dr. Beard in his conclusion is correct, provided, of course, that we eliminate from the list a very large number who do not wait for a natural death, but who end their lives while yet young, by suicide, and this, not always, as the daily press states it, "during a temporary aberration of the mind," but many cases—I

might say a large percentage of suicides contemplate death for a long time, and compare the probable miseries of a future existence with the sufferings of this life, and through their perverted reasoning, they choose the former. As to them, all hope seems gone, and by them is abandoned, health seems a condition long and forever past, life is intolerable, therefore they determine to "their own quietus make," and when the mind is fully made up, the method, time and place selected, a dreadful load seems to have been lifted, and they are again bright and happy. But what a fatal sign this brightness and and happiness often proves !

How often do we read in the daily press of some young, beautiful and popular member of society, "during a temporary aberration," who has, by his or her own hand left this vale of tears, for that "bourne whence no traveler returns !" It is usually stated that the deceased had been, for some hours before, unusually bright and apparently happy, but the calm face of the dead is all that is left to tell how deceitful was that expression of happiness!

These cases consult many physcians and are given many opinions, and occasionally a physician who imagines that bluntness is an evidence of candor, will tell them that their disease is entirely of the imagination. As before stated, these subjects are usually persons of much intelligence, and, quite contrary to the general impression, instead of giving up to their imagination they often struggle, hard and bravely, against the false impression and obscessions that are constantly arising, and they seek diligently for a cause for all their trouble. They are unable to find it ; professional advice is often unsatisfactory; they find no comfort in life, and seek solace in the grave.

These patients are often able to do an unusual amount of mental labor, and upon most subjects, are perfectly rational, and no one is ever led to suspect that they contemplate suicide until it is too late. But they do not commit suicide "during a temporary aberration," but reach their conclusion after a long and tedious process of morbid reasoning, and once the mind is made up, the relief that it gives is manifest in the countenance and actions.

Another form of Neurasthenia, in which obscessions, delusions and hallucinations play a very important part, is sometimes met with, and, as a rule, the phenomena remain under the control of the patient, and are recognized as subjective, and associated with the physical condition ; but if the source of the trouble continues unabated, there will come a time when the perverted reason ceases to control the will, and these obscessions, delusions and hallucinations are, to the patient, true, and, instead of controlling them, they control him. This may occur when their judgment and intelligence upon other matters remain unimpaired. They know that these feelings are unnatural, still they are powerless to combat them. They know that they are different from other people, hence they conceal them, and the first intimation that their friends and the public may have of their true condition, is when they have yielded to some hallucination or delusion, and have either destroyed themselves, or have committed some outrageous crime. In these cases, the deed is committed during, and is the result of an aberration of the mind, but, in my opinion, by no means of a temporary character. The aberration has existed a long time, but has not been recognized.

The following case is not a hypothetical one :—A boy at school had, durduring the period of puberty, acquired the habit of masturbation, which he practised to excess, and which reacted

upon the brain and spinal cord. His mental capacity and physical endurance were weakened, but he was ambitious, and was urged by ambitious parents to stand well in his class; he worked early and late; he did not sleep well; dyspeptic symptoms appeared with palpitation; he became morbid and began to brood, as he realized he was falling behind his class. Examination came and he failed; his disappointment was severe and he dreaded the disappointment of his parents. A deep melancholy settled upon him and thus he brooded for days, weeks and months. One day his countenance wore an unwonted brightness; his mind seemed to be relieved of its distress, and he mingled with the family with his old time freedom and vivacity. Bright and apparently happy, he left the family circle and sought his room, whence in a few minutes came the unmistakable report of a pistol, and all rushing to his room, found him already dead, with his brain pierced by a bullet. I have heretofore reported a case of a gentleman who was constantly urged while shaving, by unseen voices to cut his throat. Another case was that of a man who was often seized with an almost irresistible impulse to kill his own child. Both these cases are well.

These are, of course, advanced and exaggerated cases who have traveled, step by step, through the shadows of Neurasthenia, and have gradually approached the deep and dismal darkness where the border line of insanity seems often concealed. Many get within its reach and seem to be mercifully restrained; others cross helplessly and blindly over, and are lost.

The mental depression, which seems to be so characteristic of Neurasthenia, seems to be in greater proportion to the degree of involvement of the generative organs as a causative agent; inflammation of the prostate, impotence, and organic stricture of the urethra often cause Neurasthenia with the most profound depression. I was requested by another physician to see a case, and found an organic stricture of small calibre, and a very tender urethra with great spasm throughout its entire length. The poor fellow was not aware of its presence, and had consulted many physicians without relief. Sexual Neurasthenia was plainly written on the man's face. Introducing most carefully the softest instrument would produce intense nervous symptoms in the form of nervous chills, cardiac palpitations, cold extremities, dilated pupils and a feeling of great agony and distress. The doctor informed me one day, that his patient had failed to put in his usual appearance. A few days later he was found calmly lying by the banks of the Potomac with a pistol by his side and a ball in his brain.

A large number of these Neurasthenics, I find, have to be constantly encouraged, as they are subject to periods of the deepest despondency, and at such times, life and health, to them, seem hopeless.

In many Neurasthenics, I find that a quantative examination of the urine reveals the fact that they are not eliminating enough solids; especially is this the case with urea, consequently they are often suffering from a toxemia as a result of the imperfect elimination of the excretions.

In any case, these poor invalids are objects of our deepest pity and are entitled to our most careful consideration, and by keeping them ever hopeful, a carefully conducted line of treatment, will, in many cases, produce a cure, and save them from a violent death at their own hands. I have treated these cases for a good many years, and I find that electrical treatment, carefully selected for each case, meets the demands of the greater

number. It is a tonic to the nerve centres, stimulates metabolism and increases excretory functions. Its quieting and sedative effects are marked, and it often produces refreshing and prolonged sleep. The appetite under its influence often improves, and digestion and assimilation goes on normally, and after a time, sometimes quite a long time, the patient entirely recovers. Impotence is a very fertile source of Neurasthenia, and in these cases, mental depression and deep despondency are very common, and experience has led me to the conclusion that the large majority of them are curable. This assurance gives the patient hope and he begins once more to take an interest in life and in himself. With this accomplished much has been gained, and we may usually look for slow but steady improvement under proper treatment.

A HAT PIN SWALLOWED: LODGED IN THE GREAT OMENTUM: LAPAROTOMY: REMOVAL.

Children's Hospital, Washington, D. C.
Service Dr. J. Ford Thompson.
Reported by William N. Fisher,
Resident Physician.

Name G. G.; age 2 years; female; colored; admitted March 1st, 1899. Family history. The mother and father are living. They are both in good health. There is one other child in the family, who enjoys good health. There is no tubercular or syphilitic history.

Previous history. Labor was normal. She was breast-fed for the first year of her life and has since been given regular table diet. Dentition began during the 7th month and has progressed normally. The child has always been healthy. On January 18th, 1899 she fell from a doorway striking on her face. When picked up she was seized with a violent attack of choking. Just prior to this accident the mother noticed that the child was holding a hat pin between her teeth. Thinking that she had swallowed it, the mother introduced her finger into the child's mouth and back into the pharynx. The mother states that she felt the point of the pin far down in the child's throat, and that in her efforts to get it up, she pushed it further down, and also that it passed downward easily. This manipulation on the mother's part relieved the violent choking, but the child immediately began to vomit, which ceased when the contents of the stomach had been ejected. Upon being questioned as to what had become of the hat pin, the child stated that she had swallowed it. Careful search for the pin in the yard where the child fell was fruitless. For about three days after this accident she appeared in her usual good health. She then developed a slight cough. This increased in intensity and has existed up to the present time. It is not paroxysmal.

Four days later the child complained of pain in the left side at the lower border of the ribs. This pain has been constantly present since, being more marked at some times than at others. The patient has lost flesh rapidly. Recently very little nourishment has been taken, but it has been retained. The bowels have been regular and normal in appearance; the mother states that there have been frequent rises of temperature; there have not been any night sweats; the child has been confined to its bed for three weeks. Passes urine in sufficient quantity.

Present Condition: The child lies quietly in bed; eyes prominent; conjunctivæ bluish; face emaciated; hair thin and fine; anterior fontanelle almost closed; small beads of perspiration visible on forehead; she is irritable when

disturbed; Alæ nasi move abnormally during respiration; chest emaciated; ribs somewhat beaded; abdomen retracted; ends of long bones somewhat enlarged; limbs shrunken; sensibility, perfect, and motion not impaired.

Examination of Chest. Heart sounds rather weak but otherwise normal. Lungs—Inspection: Chest walls thin, movements rapid, but symmetrical. Palpation: increased vocal fremitus at apex of both lungs. Percussion: dullness posteriorly at apices of both lungs; anteriorly the same, most marked on the left side. Auscultation: broncho-vesicular breathing over apex of right lung with numerous fine and coarse moist râles. Left lung, same character of breathing with many large moist râles. The râles are most marked at base of lungs.

Digestive System.—Tongue coated; pharynx somewhat red. The patient takes nourishment badly but retains it.

Nervous System.—The child is irritable; nothing further noted.

Glandular and Urinary System.—Negative.

The pulse is 140 per minute, weak and very small. Respirations 66 per minute.

Examination of the abdomen.—Liver and spleen normal. At a point corresponding to McBurney's point, on the left side is to be felt a hard, globular mass, about the size of a large pea, which is movable. Running up from this point to the under surface of the ribs in the nipple line can be felt a long hard body.

Progress of the case.—March 2nd., the child has passed a quiet night; took very little nourishment but retained it; pulse and respirations unchanged; temperature runs between 99° and 101° F. General condition of the patient unchanged.

March 3rd. During the past night the child was fed by nutrient enemata which were retained. Stomach washed out and small amount of mucus found in irrigation fluid.

Operation—Preliminary examination of the abdomen revealed same condition as that discovered on March 1st. An incision in the median line was made from just above the umbilicus for about one and one-half inches. A finger introduced through this incision plainly felt a foreign body which proved to be the hat pin. The pin, the point of which was directed upward, was brought to the opening in the abdominal wall and was removed. It was three and one quarter inches long and had become encysted in the great omentum. The hard mass which had been felt through the abdominal wall was found to be a large piece of indurated omentum. The portion of the omentum which surrounded the hat pin was tied off, the peritoneal cavity filled with normal salt solution and the incision closed. A very small quantity of chloroform was used, but the patient was a long time coming from under its influence. The pulse and respiration became progressively more rapid and weaker. The patient did not rally but died ten hours after the operation.

Autopsy, fifteen hours after death. Thoracic cavity: abscess filling nearly the entire left lung: bronchial catarrh of right lung, most marked at apex: few firm adhesions along posterior edge. Heart, normal. Pericardium, normal as were also esophagus and larynx. Abdominal cavity: no trace of the head of the hat pin could be found, nor was there any evidence of where the pin escaped into the abdominal cavity. A small hole, the edge of which was black, and just about the size of the point of the pin, was to be seen in the transverse colon. Stomach and small intestine normal. Liver pale, size normal. Spleen rather dark, otherwise normal. Kidneys pale and otherwise normal. Diaphragm showed no evidence of having been pierced.

THE NATIONAL MEDICAL REVIEW,

EDITED BY

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WITH THE CO-OPERATION OF

Andrew Stewart, Ph. D., E. A. de Schweinitz, Ph.D., M. D.,
Edwin B. Behrend, M. D.,

AND

THE MILITARY SURGEON,

A SUPPLEMENT.

OFFICE: 1408 Twenty-first Street, N. W.

WASHINGTON, D. C., MARCH, 1899.

Notices and Reviews.

A TREATISE ON FRACTURES AND DISLOCATIONS. By Lewis A. Stimson, M. D. Cloth, $5.00 net. Leather, $6.00 net. Lea Brothers & Co. Philadelphia and New York. 1899.

Although in a certain sense a second edition of the author's two-volume work now out of print, this book has been so materially altered and so largely rewritten that it is practically new. The wide experience of Dr. Stimson at the Hudson Street Hospital during eleven years of service in charge has enabled him not only to make many additions, but also to adapt the work more specifically to the needs of the practitioner, especially in respect to diagnosis and treatment. The portion treating of Fractures has been almost wholly rewritten, the most marked change in classification and arrangement being that made in the chapter on fractures of the skull. In the portion treating of Dislocations the most notable changes have been made in regard to operative reduction of both old and recent injuries. The author very truly says that while the X-rays have been of interest and value in showing details of certain fractures, especially at the wrist, elbow, and ankle, yet it cannot fairly be claimed that they have yielded much information of practical value which could not have been obtained by palpation. We believe that the substitution throughout this volume of settled opinions for the previous discussion of divergent views will increase the favor with which the original work was received.

SELF-EXAMINATION FOR MEDICAL STUDENTS. Price 10 cents. Philadelphia. P. Blakiston's Son and Co. 1899.

This little book was prepared by a medical man, a teacher and a writer of experience with special reference to the actual wants of the medical student. By its help the student can successfully quiz himself on all the important branches or review any one subject in which he feels himself particularly deficient. It has been brought thoroughly up to date, and will also prove valuable to physicians who are preparing for examination before State Boards.

THE SERUM TREATMENT OF SWINE PLAGUE AND HOG CHOLERA. By E. A. de Schweinitz, M. D. Washington, Government Printing Office. 1899.

Dr. D. E. Salmon, Chief of the Bureau of Animal Industry, reports to the Secretary of Agriculture that laboratory

investigations in the use of serum for treating hog cholera and swine plague have been carried on by the Bureau for several years, and with such favorable results that the treatment was given an enlarged field in Page County, Iowa. The work conducted there during the season of 1897 showed that the treatment saved about 80 per cent of the animals injected. The results in 1898 were exceedingly satisfactory and tend to confirm those of the previous year. So much interest has been manifested in this work that this article on the subject of serum treatment for hog cholera and swine plague was prepared by Dr. de Schweinitz, who had been in charge of the work, assisted by Dr. Marion Dorset, Dr. E. C. Schroeder, and others. It is published as a bulletin of the Bureau of Animal Industry. The Department regrets to inform the public that the preparation of the serum is necessarily limited and its distribution is confined to inspectors for the Bureau and to experiment stations.

THE READY-REFERENCE HANDBOOK OF DISEASES OF THE SKIN. By George Thomas Jackson, M. D. New (3d) edition. In one 12 mo. volume of 638 pages, with 75 illustrations and a colored plate. Cloth, $2.50, net. Lea Brothers & Co., Philadelphia and New York.

The early exhaustion of the second edition of this work is a gratifying indication of the favor with which it is regarded by students and practitioners. All dermatological advances made in the interval are fully presented in the new edition by revision and by the addition of new matter and illustrations. The alphabetical arrangement of the book having proved so acceptable, has not been changed and student and specialist alike will find it as heretorore a most concise and ready available source of knowledge on all dermal affections, their symptoms, diagnosis, prognosis, and treatment. In a word, the work presents the art of dermatology as it now exists. No attempt has been made to discuss debatable questions. Hence pathology and etiology do not receive as full consideration as symptomatology, diagnosis and treatment. The author includes in this edition entirely new sections on Bulpiss, Bunion, Dermatitis from Roentgen Rays, Blastomycetic Dermatitis, Ecphyma Globulus, Lupus Pernio, Pityriasis Alba Atrophicans, and Idiopathic Multiple Pigmented Sarcoma.

A TEXT-BOOK ON PRACTICAL OBSTETRICS. By Egbert H. Grandin, M. D., with the collaboration of George W. Jarman, M. D. Second edition. Revised and Enlarged. Illustrated with sixty-four full-page photographic plates and eighty-six illustrations in the text. Extra cloth, $4.00 net; sheep, $4.75 net. The F. A. Davis Co., publishers, Philadelphia.

As the authors truly say, the major part of obstetric practice, today, is founded on fact. Where divergent views obtain, the weight of authority is on the one or the other side; at least, it is safe to teach that which commends itself to the majority of teachers, even though in a very short time further experience may cause a modification in the teaching. The present work aims at being a guide to practice, and it succeeds, for it is clinical in its teaching. It is direct in its statement wherever facts warrant such directness. The very flattering reception accorded the first edition of this work has acted as a stimulus to a most thorough revision. This revision, carefully made by Dr. Grandin, necessarily pertains chiefly to obstetric surgery and the puerperal state, since it is in these departments that progress has occurred. There is no doubt that this new edition will prove helpful to the student in the acquisition of knowledge and to the practitioner as a reliable guide. The publishers are to be commended for the beautiful manner in which the book is issued.

Progress of Medicine.

GENERAL MEDICINE AND SURGERY.

UNDER THE CHARGE OF

EDWIN B. BEHREND, M. D.

Illumination of the Stomach.

From a critical review of the divergent opinions of various authors, and upon the basis of personal observations, Oppler comes to the following conclusions respecting illumination of the stomach: He recommends the use of the Kuttner & Jacobson or the Weltzing illumination sound; the intensity of the light must not be higher than 4 candle power. Brightly glowing lamps are of no value especially in illuminating the empty stomach. The illumination must be made in a darkened room after the stomach has been emptied of its contents, and can be carried out either while lying down or standing up. The intestines must be emptied of accumulations of gas and fæces. When the empty stomach is illuminated, only spots of light are seen on the abdominal wall: at times nothing is seen, owing to the sinking back of the lamp from the anterior wall of the stomach. By carefully drawing out the tube and allowing it to glide along the great curvature, it is possible to outline the position of the latter, by following the line of greatest intensity of light with a dermographic pencil. This, of course, is impossible when the abdominal walls are very thick; the best results are attained when they are thin and devoid of fat. It appears from the results obtained in this way that the greater curvature of the stomach lies deeper than was hitherto suspected, and this fact has probably given rise to false diagnoses of megalogastria.

When the stomach contains 500–1500 cc of water, the light appears as a continuous bright band whose right upper border is formed by the border of the liver, the left upper boundary being the anterior border of the spleen. The greater curvature appears 4–11 cm. deeper when standing than when lying down. The following are some of the results in pathological cases: It is possible to make a diagnosis of tumor more exactly and even render the presence of an unsuspected tumor visible; but this is recommended only in cases where all other clinical methods have been tried. Enlargement of the stomach can readily be diagnosed; dilatation of the stomach only when there is a high degree of motor insufficiency. When the upper border of the illumination figure is separated from the lower border of the liver by a dark zone, it enables us to make out a gastroptosis. Abnormal depth of the great curvature may be caused by 1. a physiological megalogastria; 2. a pathological dilatation; 3. gastroptosis; 4. a combination of the last condition with any one of first two.

In general, gastro-diaphany, the author believes, should never be employed alone as a diagnostic agent without a consideration of all other clinical factors, and although a valuable aid, it cannot be said to replace completely any of the other methods heretofore employed. B. Oppler. Die Magendurchleuchtung. Arch. f. Verdaungskranh., Bd. iii, Hft. 3.

Ischochymia.

Einhorn has, as is well known, given the name ischochymia to that condition in which the stomach never becomes completely emptied of its contents. The author, on the basis of a number of cases indicates the method of making the diagnosis. The principal factor in diagnosis is the determination of the presence of food particles and residue in the empty stomach early in the morning, after the patient has partaken of a fairly large supper the night before. If this symp-

tom has persisted for a considerable length of time it indicates a serious condition, either a high grade atony of the muscle wall, which is uncommon, or stenosis of the pylorus. If the latter is the case, it must be determined whether the stenosis is of a benign or malignant nature.

Einhorn calls particular attention to the following points:

The abnormal size of the stomach is only pathoynomonic of stenosis if it fills out the entire hypogastrium and holds over 3 to 4 litres. If palpation over the pyloric region discloses a smooth oval tumor, and if the symptoms of retention have existed over 1½ to 2 years, the diagnosis of benign pyloric stricture is justified. The presence of peristaltic unrest speaks for pyloric stenosis and against simple atony of the muscular coats. Usually either lactic acid or gas fermentation are encountered, the first when hydrochloric acid is absent; the last when it is present. The appearance of small quantities of bile does not militate against pyloric stricture in every case. M. Einhorn. Ein Weiterer Beitrag zur Kenntuis des Ischochymie (Gastrektasie.) Zeitschrft. f. klin. Med. Bd. xxxv, p. 410.

Symptoms of Myxœdema Following Exophthalmic Goitre.

The clinical history of this case is of sufficient interest to at least merit a short recital. The patient, a young girl, aged 25 years, entered the hospital presenting all the signs of Basedow's disease; eyes protruding; incomplete closure of eyelids; large, pulsatile goitre; pulse 120 in a state of rest, which was raised to 140 by emotion or exercise, and rhythmic tremor of the hands. The subjective symptoms were in harmony with the physical signs; weakness, nervousness, habitual insomnia, etc. The heart was not enlarged; lungs and digestive function normal. Urine was abundant and contained albumin, a symptom which the author believes to be more frequent in exophthalmic goitre, than is commonly believed to be the case. The patient was put on a treatment of ergotin, ext. valerian and iron potas. tartrate. She improved rapidly under treatment; at the end of 7 weeks the pulse was 90 and all her other symptoms were greatly relieved. A year later the patient again entered the hospital with symptoms exaggerated but not as intense as the first time. The same treatment was followed by amelioration. The patient left the hospital again at the end of 5 weeks. Three years later the patient again presented herself for treatment but the clinical picture had changed completely. Instead of the typical picture of exopthalmic goitre, there appeared the characteristic symptom-group of myxœdema. Instead of the thin face, protruding eyes and animated expression, the countenance was dull, swollen and apathetic. Her hair had begun to fall out. Instead of the enlarged thyroid, this organ was reduced to its normal size and had become hard and fibrous. Treatment with thyroid extract was begun, but has not continued long enough to show any decided effect, although the general condition is somewhat improved. This case, interesting as it is rare, follows the teaching of pathological physiology; excitation of thyroid function coincides with the vascular goitre and is succeeded by a depression of function caused by fibrous atrophy as shown by the condition of myxœdema. The development of the latter disease after exophthalmic goitre has been observed in but 7 or 8 cases. What is striking in all the cases is the short time which elapsed between the exophthalmic goitre and the myxœdema. In all the cases reported thyroid treatment was efficacious and caused a rapid improvement. P. D. L. Gautier. Symptômes de myxœdème au dèbut chez une femme antèrieurement atteinte de goitre exophthalmique. Rev. med. de la. Luisse Rom. No. 11, 1898, Nov. 20.

The Diagnosis of Tubercular Meningitis by Means of Lumbar Puncture.

Lumbar puncture has found its greatest value in the diagnosis of tubercular meningitis. Furbringer reported, before

the Congress of Internal Medicine, 63 cases in 44 of which tubercle bacilli were found, that is about 70 per cent. of the cases. In the hospital at Friedrichshain, Berlin, in 79 cases, 52 were found to have tubercle bacilli in the cerebro-spinal fluid (66 per cent.). The author who had most of the examinations in the the Friedrichshain cases, gives the method as follows : when there is suspicion of meningitis, 10 ccm of the spinal fluid are withdrawn by lumbar puncture. The fluid is caught in a sterile test tube. A small centrifuge tube is then filled with the fluid and allowed to stand 24 hours under sterile conditions. At the end of 24 hours there is usually a fibrin clot in the fluid. A bit of the clot is taken up with a platinum needle and spread on a cover slip, a large number of preparations being made, usually 15 to 20. They are then prepared in the manner customary in the examination of sputum for tubercle bacilli. The examination requires patience, and the author has found it necessary to examine the entire 20 preparations. Usually his patience was rewarded by finding one or two bacilli, which of course clinched the diagnosis. H. Schwarz. Znr klinischen Würdigung der Diagnose tuberculöesen Meningitis vemiettelst der Lumbal Punction. Deutsch. Arch. für klin. Med. Bain 60. Heft 2 & 3.

CLINICAL DIAGNOSIS.

UNDER THE CHARGE OF

ANDREW STEWART, A. M., Ph. D.

Blood in Tuberculosis.

It is the purpose of this article, read before the Chicago Acad. of Med., Dec. 9, 1898, to report observations on the blood of fifty tubercular patients in the advanced stage of the disease. Every possible source of error known to the investigator was eliminated or reduced to a minimum. The hemoglobin percentage was invariably far below normal. Leucocytosis occured in 45 of the cases. Pathological leucocytosis is diagnostic of cavity formation, even though the cavity cannot be demonstrated by physical examination, its absence precludes cavity formation in fairly sthenic cases. Chlorosis was met with in 8 cases, five of which were males. There was oligochromemia, normal or nearly normal. Number of erythrocytes of diminished diameter, showing occasionl necrobiatic changes, lymphocytosis, normoblasts and diminution in adult lymphocytes, with low corpuscle index. Johnson (G.W.,) A contribution to the study of the blood of tubercular patients. J. Amer. Med. Ass., 1898, xxxi, 1527.

Caseinogen in Milk.

The milk-plasma contains no caseinogen in solution : it, with fats, occurs in the globules and particles. The former contains a maximum of fat and a minimum of caseinogen : it is, however, not pure fat, nor are the particles pure caseinogen. In nature casein never appears apart from fat, and the fat of milk is never seen without caseinogen. Harris, (D. F.), Brit. Med. J., 1898, Sept. 17th.

Ammonia in the Blood.

The chemical examination of from 50 cc to 100 cc of blood from the median cephalic vein discovered in normal blood free ammonia 0.06—1.30 mg per 100 cc. This amount either increases in fever to as high as double, or it may be very much diminished. Ztschr, f. klin. Med. xxxv, 5, 6.

Tubercle Counter-Stain.

First stain the specimen with carbol-fuchsin, as usual ; then counter-stain in the following solution :

Absolute alcohol, 100 parts,

Corallin (rosolic acid), 1 part,
Methylene-blue, to saturation, and then, glycerin, 20 parts.

Cover the specimen with the solution, allowing it to drain slowly off. Repeat 3 to 5 times. Tubercle bacilli appear red, while all else, including smegma and other bacteria is blue. Pappenheim (A.) Berl. klin. Wochnschr, 1898, 37.

A New Cancer-Parasite.

Bra (La Méd. Moderne, November 23d, 1898) has spent four years in the study of over 200 specimens of cancer, from which he has invariably been able to cultivate a fungus which apparently belongs to the asco-mycetes. The parasite was recovered from the tumors, and in some cases from the blood as well. Bra declined to go into the results of inoculation experiments at the present time.

In the discussion of the paper which was read before the Society of Biology (Paris), Domergue said that he had been privileged to witness the cultivation and inoculation of the parasite, but that the inoculation-tumors contained no epithelioid tissue, being, in fact, purely of the connective-tissue type. Rv'd. in Med. Rev. of Rev., 1899, v, 10.

Bacteriological Study in the Aetiology of Yellow Fever.

Drs. P. E. Archinard, R. S. Woodson and Jno. Archinard in reporting their experiments performed in New Orleans during the epidemic of yellow fever in the summer and fall of 1897 come to the following conclusions :

1. In a large proportion of autopsies (thirty-two times in thirty-nine)of yellow-fever cases of 1897, in New Orleans, a bacillus was found either in a pure state (two times) or in association (thirty times), similar to the Sanarelli Bacillus icteroides. This bacillus has some points in common with the coli communis, but differs from it in some of its essential characteristics.

2. In live blood taken from the veins of the elbow, in well-marked cases of yellow fever, we were able to isolate our bacillus four times in five cases.

3. In the exhaled breath mixed up with secretions from the mouth and nose (sometimes bloody) we isolated our bacillus twice in twelve cases.

4. In the scrapings of the surface of the body of the sick, principally face, neck, in upper part of thorax, we isolated our bacillus two times in every twelve cases.

5. Our bacillus injected intravenously to the rabbit, and subcutaneously to the guinea-pig, in large doses, from five to ten cubic centimetres of a bacillus culture, is always fatal, and sometimes very quickly. In smaller doses (one to two cubic centimetres) the animals are made sick, but generally recover. The animals that die show characteristic lesions of the liver, kidney, and stomach. Cultures from these organs give pure growths of the inoculated bacillus.

6. Our bacillus is identical in almost every respect with Sanarelli's Bacillus icteroides obtained from himself, and from Dr. Sternberg, but differs somewhat in its cultural aspects from Sanarelli's description of his bacillus.

7. The blood of yellow-fever cases or of recent convalescents from this disease agglutinates the Bacillus icteroides of Sanarelli, and also our bacillus in over eighty per cent. of the cases in the proportion of one part of serum for forty of culture within one hour. In less than twenty per cent. the reaction does not take place.

8. The blood of typhoid and dengue with eruption and malaria fever when properly diluted, 1 in 40, does not agglutinate the Bacillus icteroides or our bacillus except in exceptional instances.

9. The blood from a number of diseases other than yellow fever when properly diluted, 1 in 40, does not react on the Bacillus icteroides or our bacillus.

10. Normal blood properly diluted, 1 in 40, does not agglutinate the Bacillus icteroides or our bacillus.

11. The blood of persons who have had yellow fever seems to retain its agglutinative power for a number of years. The great majority of the cases tested by us who had had yellow fever in 1878 gave the reaction. Those who had had

yellow fever previous to 1878 gave us a blood which possessed no agglutinative power with Bacillus icteroides or with our bacillus. New York Med. J., 1899., lxix, 109.

Report on Fifty-Two Bacteriological Examinations in Cases of Infectious Diseases of the Urinary Tract.

Dr. Max Melchior summarizes the data obtained by his examinations (Monatsber. über d. Leistungen auf. d. Gebiete d. Krankh. d. Harn-u. Sexualapp., 10, 1898) under the following paragraphs: 1. The bacterium coli is the most frequent cause of bacteriuria in acid urine. 2. Aside from the bacterium coli, bacteriuria can be caused by the uric-acid-decomposing bacteria. 3. The bacteriuria may be of renal or vesical origin; in the latter case the prostate gland plays an important rôle as the seat of infection. 4. The bacterium coli is the most frequent form of bacteria found in cases of cystitis, pyelitis, and suppurative pyelonephritis. 5. In a large number of cases the cystitis is associated with acid urine. 6. Even bacteria causing uric-acid decomposition can produce a cystitis with acid urine. 7. In women, a coli cystitis is frequently observed, the result of urethral auto-infection. 8. The bacterium coli can be supplanted by a cystitis due to other—uric-acid-decomposing—bacteria. 9. The bacterium coli can apparently produce cystitis and pyelitis by conveyance from the intestinal canal through hæmatogenous infection. 10. Pyelitis caused by the bacterium coli is frequently associated with secondary cystitis. 11. Uric-acid-decomposing bacteria can occasionally cause a pyelonephritis without any complicating cystitis and with acid urine. Rev'd. in Med. Record, N. Y., 1899, lv, 132.

Sero-Diagnosis in Lepra.

Since Spronck has succeeded in obtaining pure cultures of Hansen's bacillus (La Sém. Méd., October 28, 1898), the possibility of applying such serodiagnostic tests as those of Widal in typhoid seems probable. Indeed Spronck, to whom this possibility suggested itself, has found that serum of healthy non-leprous individuals reacted to Hansen's cultures much the same as does the serum of non-typhoid persons to the Eberth bacillus—that is to say, in non-leprous subjects agglutination is very feeble or entirely absent. On the other hand, in twelve trials with the blood of different lepers, agglutination was observed in every case in dilutions varying from one in sixty to one in eleven hundred. If subsequent provings substantiate these findings, the method will go far to clear up the controversy as to the relationship between lepra, syringomyelia, and the various states generally included in the term Morvan's disease. Rev'd. in Med. Rec., N. Y., 1899, lv, 132.

BIOCHEMISTRY IN RELATION TO MEDICINE AND HYGIENE.

UNDER THE CHARGE OF

E. A. DE SCHWEINITZ, Ph. D., M. D.

Director Biochemic Laboratory, B. A. I., Agricultural Department.

The Results of Koch's Tuberculin in Pulmonary Tuberculosis.

The author reports a number of cases treated with the TR and comes to the following conclusions: Non-tuberculous individuals may react to very small doses of TR. Tuberculous patients that have fever are not suitable cases for the use of TR. The employment of TR for the purpose of treating tuberculosis of the internal organs should never be recommended if it is possible to give other treatment. Ueber die Ergebnisse der Anwendung des neuen Koch'schen Tuberkulins (TR) bei Lungentuberkulöse. Burghart. Berl. klin. Wochenschr., 1898, No. 7, 143.

Natural Serotherapy.

In a previous article the author suggested that perhaps the serum obtained after the spontaneous coagulation of the fluids in cases of tubercular pleurisy, might exert some therapeutic influence upon animals treated with tubercle bacilli. He made some experiments upon dogs and succeeded in demonstrating that a dog infected with tuberculosis and treated with this material was cured by the injection of it. This fact he thinks, explains why a guinea-pig inoculated with tubercular pleural effusions does not always develop tuberculosis. Serotherapie tuberculense naturelle chez l'homme. M. Péron. In Compt. rend. Soc. d. Biol., Vol. 5, No. 32, Oct. 28, 1898.

The Disinfecting Power of Soaps.

The author made some investigations upon the disinfecting action of soaps and as a result of his experiments came to the following conclusions: Soaps whether they be sodium or potassium, possess a marked disinfecting action which can be attributed neither to the alkali nor to the fatty acids which they contain, but to the salts themselves. (He forgets, however, that in solutions the acid and basic radicals are supposed to be in the ionic state. E. A. de S.) The liquids that are used for dissolving the soaps of course interfere with their disinfecting action if they fail to be good solvents. The temperature also influences their action, not only because the increase of temperature aids in disinfection, but also because at a higher temperature more soap is in solution. Therefore all soaps which contain proportionately small amounts of the salts of the fatty acids have weak disinfecting action. The soaps which contain considerable resin acids are the more inefficient, the more resin acid salts they contain. Therefore the soaps which should give the best disinfecting action are those that contain the least water. Those which belong to the group of filled soaps and contain glycerine, brown and green soaps should always be avoided as they very often contain resins. The best soaps are the white soaps which contain the least water. Beitrag zum experimentellen Studium der Desinfectionsfähigkeit gewlicher Waschseifen. A. Serafini. Arch. f. Hygiene, Vol. 33, hft. 4.

The Toxin of Pest.

The author has made a study of the toxin produced by the pest bacillus and comes to the following conclusions: A poisonous substance which is very easily affected by heat is contained in the bodies of the cells and is only very slowly soluble. Cultures of the pest bacillus which are several weeks old possess a high degree of toxicity for small animals, especially mice, and this toxicity appears to be due not only to the products in the culture media brought about by the germ, but also to the poisons which are dissolved out from the bodies of the bacteria themselves. All of these poisonous substances exert the same action upon experimental animals. Gradually increasing doses of pest toxin render the mice immune to the poison, but do not make them immune against a subcutaneous inoculation with virulent bacilli. The blood serum of cats which have obtained a certain degree of resistance to the pest toxin shows antitoxic properties for the pest toxin, but no recognizable bactericidal action upon the living bacilli. The toxic substance in bouillon cultures may be precipitated by absolute alcohol. The experiments show that the methods that have been used for immunizing animals for the purpose of producing a serum which would be useful against the pest will not yield an antitoxic material because the method of handling the material which is used for producing immunity has been such as to destroy its poisonous properties. It is possible perhaps by a combined immunization of animals with pest toxins and bacterial cells to secure a more active serum than has heretofore been done. Beitrag zur Kenntnis der Pesttoxine. Dr. Gottlieb Markl, Centralbl. f. Bakt., Vol. 24. No. 20. Nov. 24, 1898.

The Virulence of the B. Coli Commune.

The author undertook a series of experiments to determine if the bacillus coli while living as a saprophyte would find such conditions in its surroundings that would enable it to enter the animal

organism in a higher degree of virulence, or if this property is acquired on account of the certain conditions of nourishment to which men and other animals may be subjected. He made experiments with the fæces from healthy individuals and also from grown cats fed in various ways, and studied the changes in virulence and also the morphological cultural characteristics of the different germs. He comes to the conclusion that if we attempt to isolate from the fæces Bacillus coli we seldom find a germ which is indentical with the Bacillus coli communis [type Escherich]. As a rule we find certain cultural properties which differ from this type. The virulence of the Bacillus coli from the excreta is not constant and changes according to character of food and the effect of the product of decomposition. If one compares the virulence of the coli Bacillus with another bacillus obtained from the same cat under different diet the following results are obtained: A milk diet decreases the virulence of the coli. A meat diet also decreases the virulence of the coli but in a slighter degree while a vegetable diet increases this virulence. The better the general condition of the animal, the less will be the virulence of the coli Bacillus. The morphological and cultural differences are most marked when the assimilable albuminoids have been reduced to the smallest amount. If the bacillus coli is allowed to remain in the substratum in which it is found, for example, fæces, it changes its morphological condition in so far that it appears like a typhoid bacillus, or it is overcome by typhoid-like bacteria which are almost always present in the excrement. The process of decomposition increases, and direct sun-light causes gradual decrease in the virulence of the coli. The coli in fæces, preserved and exposed to the action of the sun-light, retains its life longer than when exposed on paper, thread or cloth of any sort. Experimentelle Utersuchungen über die Virulenz des Bacterium coli commune. Valgussa, Franc. Centrallb, f. Bakt., Vol. 24, No. 20. Nov. 24, 1898.

Diphtheria Poison and the Condition of the Organism.

The authors in making an investigation of the condition of the organism as influencing the effect of the diphtheria poison, came to the following conclusions: If the minimum dose of diphtheria poison for an animal is given to it when the animal has been suffering from hunger or thirst or other conditions which would materially affect its natural resistance, it will succumb more quickly. Under these conditions, even a dose which is less than a fatal dose under ordinary circumtances will cause the death of the animal, and show results like those which would have been brought about from diphtheria poisons. Continued use of alcohol and coffee decreases the resistance of the animal, and renders it more susceptible to diphtheria poison. Muscular exercise increases the resistance of the organism. The products of saprophytes make the organism more susceptible to diphtheria poison. The products of the Bacillus coli, typhoid and streptococcus have a similar effect. Untersuchungen über die Wirkung des Diphtheriegiftes in ihrer Beziehung zu den Lebensbedingungen des Organismus. Valagussa, Franc und Ranelletti, A. Centralbl. f. Bakt., Vol. 24, No. 20. Nov. 24, 1898.

Therapeutic Notes.

Catheters and Cystitis.

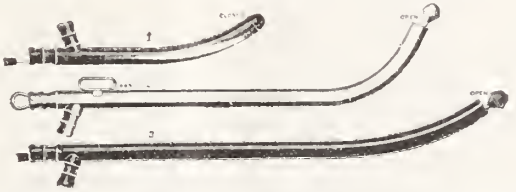
R. N. Mayfield, M. D., New York, says:

It is well known that when it is necessary to use a catheter of usual construction—that is, with the ordinary fine perforation as an inlet thereunto—it does not work readily or satisfactorily, or subserve fully the results expected from it.

Examples of such unsatisfactory operations are seen where there is a good deal of mucus present in the bladder, such mucus being apt to surround or lie upon the end of the catheter, clogging or stopping the apertures thereof and preventing the ingress of fluids to be drawn off; again, when sediment or calcareous matter is present, it clogs, even sometimes filling in part completely the apertures, with consequent failure of the catheter to fully perform its functions. Such failures are especially apt to happen in nearly, if not quite, all forms of chronic diseases of the bladder, and notably so in cystitis.

My object, therefore, is to present a catheter that is reliable and efficient in operation when the use of a catheter is indicated in all conditions and diseases of the bladder. In this instrument the danger of clogging or failure to perform its functions is obviated, and its interior may be readily made aseptic, and bits of mucus that usually clog an ordinary catheter may be readily drawn off.

This catheter is of very simple construction, being tubular, with the curve of an ordinary instrument, and opened at the end for an inlet. For the closure of this open end, and for the easy insertion of the catheter, as well as for other purposes, a bulbous or rounded head is used, preferably solid, and attached to one end of a wire, passing through the body or tube and projecting at its rear or outlet end.



This construction forms a very efficient catheter having an area of opening so large as to greatly obviate the danger of clogging, for, if mucous should lodge against the open end, the working of the head back and forth upon its seat would cut away the obstructing bits of mucus and permit them to pass through the tube.

With this instrument there should be no hesitancy in using nitrate of silver, iodine, corrosive sublimate, carbolic acid, or hydrogen solutions, in the bladder, as any of these solutions can be readily drawn off or neutralized, thus preventing poisoning from absorption, or preventing ruptures from gases that form in the bladder.

Regarding the treatment of cystitis with the employment of this cathether, presuming that we have a typical case, with ropy, viscid, and tenacious mucus, the membrane thickened and possibly ulcerated, and in deep folds—"ribbed," as it were—we begin the treatment as follows:

1. Inject a quarter of a grain of cocaine dissolved in a drachm of water into the membranous portion of the urethra.

2. Anoint the largest hard-rubber catheter that can be well passed into the bladder, and increase the size one number each week until the urethra is normal size.

3. Begin with dilute hydrogen solutions—perfectly hydrozone—one part to twenty of lukewarm water, using this solution freely, especially when enploying the large size. If the small size is used at the beginning, I recommend the use of only two or three ounces at a time until removed by the return flow. This can be re-

peated until the return flow is clear and not "foaming," which indicates that the bladder is aseptic.

4. Partly fill the bladder with the following solution: tincture of iodine compound, two drachms; chlorate of potassium, half a drachm; chloride of sodium, two drachms; warm water, eight ounces. Let it remain a minute or so and then remove. This treatment should be used once or twice a day.

Where I suspect extensive ulceration I recommend once a week the use of from ten to twenty grains of nitrate of silver to the ounce, and neutralize with chloride of sodium solutions.

This treatment carried out carefully will be satisfactory, as there is no remedy that will destroy bacteria, fœtid mucus, or sacculated calcareous deposits like hydrozone.

A Very Grave Error.

The experience of many of the best men of the profession, not only of the United States but abroad, has established the clinical value of antikamnia. Among those who have paid high tributes to its value and who occupy positions of great eminence, may be mentioned Dr. J. Acheson Wilkin and Dr. R. J. Blackham, practitioners of London. They have found it of value in the neuralgias and nervous headaches, resulting from over-work and prolonged mental strain, paroxysmal attacks of sciatica, brow-ague, painful menstruation, la grippe and allied conditions. Indeed the practitioner who has such cases as the latter come under his observation, who attempts their relief by opiates and stronger drugs, when so efficient an agent can be used, which is much less harmful, commits an error.

Experience goes to prove that ten grain doses of antikamnia in an ounce of sherry wine, taken every two to four hours, will carry the patient through these painful periods with great satisfaction.—Medical Reprints, London, Eng.

Mal-Nutrition.

"I am sure the Imperial Granum Food was an efficient agent in restoring the health of a baby boy recently under my care. He was suffering from mal-nutrition with a most persistent diarrhœa. Many foods were tried and discarded, and I was beginning to lose heart, when I happened to think of the Imperial Granum. Its use proved it to be very easily assimilated, and I think it saved the baby's life."——M. D.

Stubborn Coughs.

Respiratory disorders are intractable largely because of stomachic derangements and mal-nutrition. A reliable and positive aid to the stomach in these cases is Gray's Glycerine Tonic Comp. and no congestion or depression attends its use. It promotes assimilation, soothes irritated tissues, arrests coughs, relieves dyspnœa, conquers debility, and is of marked value in the prevailing influenza.

Glycerinated Vaccine Lymph.

The most recent addition to the physician's armamentarium is that of glycerinized vaccine lymph, or vaccine virus purified and preserved by the admixture of chemically pure glycerine. The superiority of this form of virus over all others is a subject of universal interest. It is pure virus as shown by the researches of many eminent Bacteriologists. It is successful in a large porportion of primary vaccinations as evidenced by the reports of thousands of vaccinators who are using the products. It is practically permanent and may be relied upon at least six months.

Mulford Company have erected a special vaccine plant upon the most modern and approved scientific plans and are supplying large quantities of glycerinized vaccine lymph which is guaranteed to succeed in 100 per cent. of primary vaccinations and retains its strength for from six months to a year.

A Prescription

compounded with commercial bromides, frequently nauseates or develops physiological symptoms not looked for. These difficulties can be avoided by specifying Peacock's Bromides. This preparation is absolutly uniform in dosage, each fluid drachm representing fifteen grains of the combined chemically pure bromides of potassium, sodium, ammonium, calcium and lithium, and it can be relied on at all times, provided you obtain the genuine, to produce the best possible bromide effects.

TRANSACTIONS OF THE MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA.

EDITING COMMITTEE:

GEO. M. KOBER, M. D., JAS. D. MORGAN, M. D., LLEWELLYN ELIOT, M. D.

MEETING OF NOVEMBER 16, 1898. Dr. S. C. Busey, President, in the Chair.

Continued from March number.

A case of ruptured spleen. Operation. Recovery.

DISCUSSION.

DR. KLEINSCHMIDT: "The blood-making functions of the spleen during adult life are by no means established. It was a well established fact, however, that after severe hemorrhages the hæmatopoietic organs were excited to increased activity, and in a non-fatal hemorrhage repaired the loss in a comparatively short time. It was unfortunate the blood of the patient was not examined before the rupture took place in order to determine the normal number of red blood corpuscles per ccm. As it was, however, this of course could not have been done. At the same time it was well established that the number of red corpuscles in a perfectly healthy adult, male, might vary to a loss of 1,500,000 per ccm so that the blood count would only yield 3,500,000 per ccm, and in a healthy adult, female, the variations are apt to be still greater, even as high as 2,500,000. In the boy operated on the normal number was perhaps less than 5,000,000 per ccm, so that after all the actual loss in his case was less than would be indicated by the report of the examination. At any rate, the second count went to show that rapid reproduction of new red blood cells was going on."

DR. BOVEE: "I think it amazing this boy should have recovered after such severe injury, especially that he survived the operation. The spleen must be sutured, but the extreme size of some of the blood vessels and several conditions of tissue makes it a very difficult operation. I have removed the spleen from a living body twice. In my first case, a woman at Columbia Hospital, I found a number of dense adhesions between the liver and the spleen and the spleen and diaphragm. Did not lose ½ ounce of blood from vessels, but there was large hemorrhage from the spleen. The instant I removed tumor patient collapsed. She had some heart trouble, and I first attributed death to the anæsthetic, then thought the removal of pressure against the spleen by tumor was the cause. The other splenectomy I performed last Winter in a woman about 55 years of age. Patient got along well, and have not heard from her since. The first tumor weighed 11 pounds and the second 7 pounds and some ounces."

DR. KOBER: "Some surprise has been expressed as to the recovery of this boy, and why the boy reported by Dr. Glazebrook, with slighter injury should have died. The result of such cases depends upon the amount of hemorrhage, extent of injury, and more particularly upon the amount of shock. It is a well-known fact that men have died from gun-shot wounds of the abdomen when subsequent examinations have shown no visceral in-

juries and the individuals must have died from shock.

CASES ILLUSTRATING THE VALUE OF THE X-RAY IN THE TREATMENT OF FRACTURES OF LONG BONES WITH DISPLACEMENT.

By A. R. Shands, M. D.

No subject in the wide range of surgery has received more attention than that of the fracture of bones. From time immemorial surgeons have given the subject great study; innumberable devices have been used, all with the same object in view—that of bringing about the best results. Many of these have long since been abandoned for the adoption of newer methods which in turn have likewise been dropped and others taken up. The number of deformities and cases of non-union as a result of the treatment employed, as well as the great number of appliances that have been used, show how imperfectly the methods have answered the purpose.

The first and most important point in these cases is a correct knowledge as to the position of the fragments of the broken bones, before attempting reduction. Thanks to modern science, we have in the X-ray the most valuable aid in diagnosing the true position of the fragments of the broken bone.

Every hospital that proposes to do this kind of surgery should be equipped with this apparatus. It would be an excellent routine practice to have skiagraphs of every fracture taken after reduction and application of the splints, to be sure that the fragments are in the best possible position for union.

After a correct diagnosis as to the position of the broken bones has been made, the first and most important step in the treatment is to bring about the best possible approximation of the broken ends. Many conditions militate against this perfect approximation, such as a great separation of the ends; muscular action, which often makes it difficult to bring them together by manipulation and at the same time makes it impossible to hold the ends together, especially if the line of fracture is oblique. Interposition of soft tissues is another obstacle often encountered. All of this is more strongly emphasized by the numerous cases of non-union and union with deformity that we meet with. Nothing can be more mortifying to a surgeon than a failure to get union, nor proclaim more loudly his lack of skill than to get union with deformity.

In these days of antiseptic surgery and almost perfect modern surgical technic, why should one hesitate to cut down on fractured bones to satisfy himself with absolute certainity as to the relative positions of the broken fragments? In other words, all simple fractures with displacements that cannot be easily reduced so as to obtain a perfect approximation, should be converted into compound fractures by means of the knife, under the best possibie antiseptic precautions. In doing this nothing is added to the severity of the case, and often by so doing, blood clot and effusion can be removed, which will put the surrounding tissues in a better condition to bring about repair to the injured parts.

The writer does not mean to say that all cases of simple fractures should be so treated, for there are many fractures without displacement and many with slight displacement that can be easily re-

duced and held in apposition by simple means that will not require such radical procedure, but it is asserted that all cases that are difficult to reduce and those that have interposing tissues should be treated by open operation, and after approximating the broken ends they should be secured by some extraneous means, such as silver wire or kangaroo-tendon suture; better still by leaving the drill in the bones. Later the drill can be easily removed after union has become sufficiently firm to prevent a recurrence of the displacement. When the line of fracture is oblique, the drill left in the bones projecting through the soft tissues is by far the most perfect means of fixing the bones in opposition. When the fracture is located near a joint, especially the elbow joint, which is beautifully illustrated by CASE III. it is impossible to keep the small pieces of bone in apposition with the longer bone without cutting down on the seat of fracture and securing it there.

CASE 1. Age 13 years. Fell from a horse February 14, 1898, producing fracture at junction of upper with middle third of right femur. Position of fragments better shown by skiagraph No. 1 than can be done by any description. This case was referred to me by Dr. W. A. Gordon, of Orange County, Virginia, May 11th, about three months after the accident. The photograph of the case was taken at Lionel Laboratory, Emergency Hospital, the day that I first saw the case. No definite history of the treatment that the patient had received was obtained beyond the fact that several attempts at reduction had been made by the family physician and that he had been treated on an inclined plane at first, and later the limb had been put up in plaster of Paris.

Upon examination I found the general condition of the patient bad, the result of three months' confinement in bed. There was marked atrophy of right limb which rotated outward to 45°. Voluntary motion nil; passive motion was resisted by marked muscular spasm and produced great pain. The limb was two inches shorter than its fellow.

Operated May 12, 1898. A lateral incision about five inches long was made over the seat of the fracture. Fragments of the bone were found to be united by firm fibrous union in the overlapped position shown in the photograph. Bones were separated; a transverse section of the ends was made. It required considerable force to extend the leg to obtain an approximation of the fragments, the result of muscular contraction of three months' standing. Silver wire was used to hold bones in position. Wound closed with cat-gut suture; no drainage. Antiseptic dressing applied and limb put up in a plaster of Paris spica extending from foot to the nipples. Temperature reached the highest point, 100½°, afternoon after the operation; it dropped to normal on third day, where it remained. Patient had considerable pain during first two days caused by the stretching of the muscles; it was relieved by moderate doses of morphine. Plaster of Paris removed at end of six weeks; primary union perfect; bone firmly united. The following day the patient was allowed up and around on crutches, which were used for about four weeks, when one crutch only was used for two weeks. Twelve weeks after day of operation patient was able to walk with almost perfect gait, without support. Final measurements made the last time I saw the patient revealed the fact that limb was less than 2-8 of an

inch short. At present the patient is walking to school one-half mile from his home.

Case II. Age 22 years. Sustained fracture of both bones of right leg February 2, 1898. Came under my care April 28th. Operation on April 28, 1898. Anterior incision about five inches long made parallel to crest of tibia and about ½ inch to outer side. Space between ends of bones filled with dense fibrous tissue. Transverse section of ends of tibia made and when approximated were held by a drill left in projecting through the dressing. The fracture of the fibula being an oblique one, the edges were freshened and held together by a kangaroo-tendon suture. Wound was closed without drainage; antiseptic dressing applied and plaster of Paris case put on extending from the toes to middle of the thigh. At end of three weeks the drill was removed and wound inspected, when primary union was found to be perfect. Six weeks after the operation the plaster of Paris case was removed and another extending from just below the knee to the ankle, was put on and patient allowed up on crutches. Solid bony union was delayed in this case, it being about four months after the operation before the crutches could be discarded. This was due to the patient's general condition being very poor. October 28, 1898, photograph was taken which shows good, solid, bony union. Patient walks well unaided, leg about three-eights of an inch short.

In both of these cases it should be noted that the plaster of Paris was extended well beyond the joints, above and below the seat of the fracture, which produced complete immobilization of the entire limb. This is an excellent safeguard to prevent any danger of the fragments of bone becoming displaced, and at the same time adds very much to the comfort of the patient, by putting at perfect rest the muscles of the injured limb, and thereby preventing painful spasm of the muscles.

Case III. Age 9 years. Fracture of right humerus one inch above elbow, March 4, 1898. On day of accident forcible manipulation at reduction of the fracture was made and arm put up in a plaster of Paris splint. On the thirteenth day after injury X-ray photograph taken through the plaster of Paris dressing, showing that no reduction of the fragments had been accomplished.

March 25th, three weeks after the accident, Dr. W. T. Bull, of New York, operated on the case, and to him I am indebted for the privilege of reporting the case and also for the following notes regarding the technic of the operation.

Through an open incision on posterior aspect of the elbow, the position of fragments as shown in Plate VII. was found to exist. The lower fragment was tilted inward and upward and so situated as to prevent normal flexion of forearm on arm; fragments were sharp pointed. There were very dense adhesions which glued everything together, although there was motion between the ends of the fragments which were pried apart and traction made upon the elbow to reduce the deformity, but with no success. The ragged and pointed edges were cut square and holes drilled through. After fragments were approximated they were held in position with kangaroo-tendon sutures. Wound closed except at lower end, where a piece of drainage gauze was left in. After the application of an aseptic dressing, arm was put in a plaster of Paris case with forearm slightly flexed. Very little reaction followed; gauze removed

on third day and repacked for forty-eight hours longer, this was gradually removed. With exception of a small, discharging sinus for a few weeks, the recovery was uneventful.

The second photograph [Plate VIII.] of this case taken two months after the operation gives side and front views of the elbow and shows the articulating surface to be in perfect position.

This case has recently been examined by the writer, that is to say seven months after the operation. The motions of the elbow are practically perfect. Extension may possibly be limited by three or four degrees.

In closing this report I wish to thank my friends Dr. T. Ritchie Stone and Mr. W. H. Merrill, for the excellent X-ray photographs illustrating this article, which were taken by them at the Lionel Laboratory, Emergency Hospital, Washington, D. C.

DISCUSSION.

Dr. Carr: My way of treating simple fractures lately is to put them up in suitable dressings and then have an X-ray picture taken to determine whether the bones are in good apposition or not: shortening of the limb, or serious displacement are readily detected by the X-ray through any kind of dressing, though not so easy through plaster-paris, but still distinct enough to show the displacement. I had a fracture of the femur in a boy 10 or 12 years of age. The leg was put up in plaster-paris and the fragments lapped from 1 to 1½ inches over each other. This could not not be distinguished by manipulation, but the X-ray picture showed this displacement and I wired the bones, with excellent results.

Meeting of November 23, 1898.

The President, Dr. Busey, in the Chair.

The President announced the death of Dr. Charles M. Hammett, and appointed the following committee to draft suitable resolutions to be presented at the next meeting: Drs. Woodward, J. Ford Thompson and J. D. Morgan.

Dr. Smith moved that the second session of 1898 close with the meeting of the Society on December 14th, and that the Corresponding Secretary notify the Secretary of the Washington Academy of Sciences that the President's Address will be delivered on that night. Carried.

Dr. D. S. Lamb presented the following specimens:

1. *Hydrocephalus in a calf.* The calf was brought to this city with a carload of cattle, was several days old at death; and was killed in some way while en route, though there was no external sign of injury. However on opening the skull the cerebral hemispheres were found much dilated and distended with the usual hydrocephalic fluid and some blood as from a hemorrhage. The hemispheres were hollowed out into mere sacs. This is the second case I have seen in young cattle. The text books on comparative pathology scarcely mention acute hydrocephalus; and state that the chronic form is exceptional in cattle while frequent in the horse.

2. *Occipital Meningocele.* Head and part of neck of infant which was born alive, being delivered with forceps; it passed meconium once, after which it had no further stool; began to nurse on second day and died on third; it was stated that it did not die of and indeed had no convulsions. The mother, a primipara, was about 22 years old and healthy. I have called the tumor a meningocele; it may however contain some brain matter, in which case it would be more properly a meningo-encephalocele or as it is also termed hydrencephalocele. It was situated in the occipital region and protrud-

ing through an opening due to a failure in the union of the subdivisions of that bone. This failure permits the brain membrane to protrude, sometimes with and sometimes without brain substance. Death would seem most naturally to occur by reason of pressure which could hardly be avoided in this situation. The specimen was brought to the Museum by Dr. S. M. Pierre.

3. *Anencephalus.* From Dr. Wm. F. Walter. A white female fœtus; most of these cases are female, the reason of which is not clear. It is apparently at term. There is a vascular mass on the upper surface of base of skull to which is attached part of the amnion membrane; a portion of this amnion arches over backwards and to the right to be attached to the skin on the right side of thorax in line with axilla. The head is strongly inclined to the left, resting on the shoulder. There is a small spina bifida in thoracic region. The eyes and ears are normal and normally placed. Nose flattened and nostrils widely separated. Mouth more extensive on right side than left; fissure on right upper lip in usual situation of such fissures. There is a rounded cord extending from the gum between second and third right upper teeth along the bottom of the fissure, at the upper edge of which the cord becomes free and is broken off, its other attached end being now of course unknown and undeterminable. At the upper end of the fissure is a large tag of skin. The lower jaw is narrowed on the right side by a fleshy band extending from lower lip along right border of jaw. The left upper lip is poorly developed, the ulna absent and elbow therefore immovable. The mother was 21 years old, primipara. So far as concerns the anencephalus and spina bifida, this seems to be a clear case of monstrosity due to adhesion of amnion to fœtus. The minor anomalies are from some disturbance not so clear. The general condition of nutrition is good, just as it always is in these cases; a fact which shows the small part which the central nervous system plays in the development of the embryo.

4. *Arrest of development in fœtus.* From Dr. G. R. L. Cole. Two male human fœtuses about term; one developed normally, the other had ceased growth at about five months and is also much shrunken. The mother was 26 years old; and had her menses at 13 years; at 14 gave birth to a term child which died. She contracted syphilis for which she was treated for two years. The second pregnancy ended last July; there was but one placenta. The explanation of course is that in some way not now clear to us, the nutrition of the one twin had been cut off at about five months and it had died. Unfortunately the woman was delivered by a midwife who noted the fact of but one placenta, but did not notice the relations of the cords to each other and to the placenta; they may have untied before joining the placenta; the one may have been twisted, or otherwise its circulation interfered with; she failed to notice these things and so there is a doubt as to just what was the source of interference.

DISCUSSION.

Dr. A. F. A. KING. Referring to the case of anencephalus with adhesions of the amnion it would be interesting to know if there was a deficiency of the liquor amnii. Such is the usual explanation of these cases. The injury to the skull in the case presented was probably produced in the same way that fetal limbs are occasionally amputated in utero, by bands of amniotic membrane.

I cannot agree with Dr. Lamb that the nervous system plays only an inferior

part in the government of fetal development. He claims that this child was well developed, whereas it is very poorly developed, having many deformities. The nervous system is just as much the ruling power in the development of the fetus as it is the government of the functions of an adult individual. Even the very lowest organism, a single cell, has, and must have, its primitive central nervous system, namely its nucleus, which presides over the cell contents, and without which the cell cannot live, and cannot develop other cells.

Dr. LAMB. The condition and general nutrition of the child is good, arms, with the exception of the left forearm, legs and pelvis, and a good part of the body, are well developed. This anomaly begins early in fetal life. It is the general opinion that this is the case. Many specimens show simple anencephalus, while the rest of the body is well developed, the development of the body goes on entirely independent of the fact that the brain matter and a good deal of the spinal cord is absent. The development of the fetus seems to depend upon the circulatory system, and any interruption of this system causes deficiencies.

DIAGNOSIS OF TUBERCULAR MENINGITIS IN CHILDREN.

By Dr. PHILIP S. ROY.

I would not bring this subject before the Society but that no one description I have read is complete. Mills, in his recent book on nervous diseases, says it is one of the best known of the intra-cranial diseases, and yet his description is very imperfect. I cannot agree with Hirt that the majority of cases commence with convulsions. Dividing the disease into stages is confusing. When a physician is first called to see a patient with this disease, he will nearly always be told that the child has not been well for some time, and headache, vomiting and constipation will be the most prominent symptoms. The mental symptoms are not constant generally in children under 3 years of age drowsiness occurs early in the disease, while in older children the mind will be clear and active until the later stages. I have seen one case in which the mind remained bright for three weeks. Headache, vomiting, tenderness in cervical region, irregular fever and pulse rate, being the strongest diagnostic points. In another patient the mind was clear for four weeks, though many of the symptoms of tubercular meningitis were present. Contraction of the muscles in the cervical region with tenderness on pressure, are among the early symptoms, and a day or two later in older children, severe pain in the chest and abdomen will be complained of. Stumpell attaches great importance to these pains, but says he cannot explain them, I believe they are due to pressure from increase of cerebro spinal fluid. This increase of pressure also explains the position of the child in bed; it is the flexed position; the hands resting upon the chest, and the lower extremities flexed upon the pelvis. Herpes upon the lips is the most important of the skin symptoms. I have never seen herpes in typhoid fever although Duhring says it does occur. The tache cérébral is of no diagnostic importance. The "cephalic cry" is not pathognomonic but is very valuable. In broncho-pneumonia and active intestinal attacks we may hear a very similar cry, and have a mental condition closely resembling that in tubercular meningitis. Any of the cranial nerves may be paralyzed, but the nerves supplying the eye offer the most marked symptoms. The axis of the eye

deviates in most cases and light produces discomfort. The pupils are described differently by almost every writer. Some state dilatation is the most common, others contraction. I believe they vary during the whole course of the disease from day to day and in a large per cent of cases, we see the wavy pupil, which I have never seen occur in any other acute disease, under a bright light and as well as in a twilight, the pupil will change from marked contraction to the widest dilatation. Until the mind becomes very dull the tongue generally will be clean and moist in marked contrast to the "typhoid tongue." The temperature changes many times in 24 hours. Sometimes normal. This irregular fever is characteristic of all tubercular conditions. The pulse, until the last stage of the disease is slow, but with many short periods of rapid action often changing 20 beats during the visit of the physician. Respiration without lung complication is quiet, with prolonged sighs. In the later stages come convulsions, rapid pulse, irregular respiration, all points to a fatal termination. Every source of tubercular infection should be looked for. The lungs, lymphatic glands, and disease of the bones should all be considered. Very slight disease of the lungs will cause this disease and is often overlooked. The cerebro-spinal fluid should be examined. I do not know about others, but tubercular memingitis has given me many times, much trouble, from a diagnostic standpoint.

DISCUSSION.

DR. ACKER. Last year I read a paper before the American Pediatric Society on "Two cases of Meningitis, apparently tubercular, with recovery". First case, black, male, about three years old, had rickets with lung disease. Had retracted head, screaming spells, apathy, irregularity of pulse and respiration. Second case, black, male, nine years old, with previous history of tubercular adenitis and keratitis. Had vomiting, head retracted, lung trouble, obstinate constipation, apathy, irregularity of pulse and respiration.

DR. JACOBI said that he had seen one case of probable tubercular meningitis that recovered, but he was doubtful about the diagnosis. Dr. Holt gave the history of several cases of apparent tubercular meningitis, but results showed that they were cases of simple meningitis. One case had meningitis with recovery. Sometime afterward the child died of general tuberculosis but the autopsy showed that the meningitis was of the simple type and not tubercular. Dr. Samuel West in the London Clinical Society Transactions, Vol. xxviii, relates the history of a girl aged two years, seven months, with all the symptoms of the disease, but after a prolonged sickness recovered and her brother, aged nine months, entered the hospital about the same time with similar symptoms and died in several months. The necropsy proved the cause of death to be tubercular meningitis. It is fair to hold that the girl had suffered from the same disease, especially as there was a hereditary tendency. Dr. Frey gives a case of tubercular meningitis with recovery, diagnosis having been made by lumbar puncture. Rotch mentions a case of marked cerebral meningitis due to teething, and the symptoms all disappeared when the tooth appeared. Dr. Northrup in 1890 read a paper before the American Pediatric Society, entitled "On what early symptoms may we rest the diagnosis of tubercular meningitis", and said "on the following four legs will I rest my diagnosis in cases of tubercular meningitis, viz :

Persistent vomiting, irregularity of pulse, irregularity of respiration, apathy.

In the discussion that followed, Dr. Earle, of Chicago said that four better symptoms than these would be proinitial stage of slow fever and uneasiness, a history of some hereditary taint or trauma, projectile vomiting, local spasm.

By these signs he means that the child is restless and uneasy, wishes to be held on the lap, and wants to go from the nurse to the mother, and there is a family history of tuberculosis. By projectile vomiting is not meant the simple regurgitation of milk from an over full stomach, and the local spasm is not simply the retraction of the head, but a spasm of the body.

Dr. Roy did not mention the low temperature as one of the symptoms in tubercular meningitis, but it is one of the main points and upon which Jacobi places great stress.

In older children the diagnosis can be made with more certainty than in infants, because the symptoms are more marked. Tubercular meningitis must be diagnosed also from simple posterior basic meningitis in infants. There is a specific organism in this form, a diplococcus, closely allied to the pneumococcus. We can only be certain of these cases, by making a lumbar puncture and finding either the tubercle bacillus, or this diplococcus. In most of the cases however the diagnosis is not made until after the autopsies.

Dr. LOCHBOEHLER said : " In a case of my own where Dr. Adams made the diagnosis of tubercular meningitis, the patient was two and a half years old. The child had been sick nineteen days when I was first called in. The temperature was 100, next day 104, with pulse of 140. There was present a rash resembling typhoid rash. There was tenderness in the cervical region, but no spasm, no rigidity, and only now and then a cry. The fever lasted from May 25 to June 5, the temperature ranging from 100 to 104, then dropping to normal and remaining so for several days. The temperature went up to 104 again, and ranged from this to 102 until death, June 18. The pulse was usually between 140 and 130, sometimes 150. There was absence of tubercular history, and of a local focus of the disease. Slow pulse is usually present in these cases, but in this, we had a high pulse from begining until end. No post mortem."

Dr. ADAMS : " Much depends on the age of the child in diagnosing this disease. There are several diseases with which it may be confounded. For instance differentiation between typhoid and tuberculous meningitis is very difficult. The history of Dr. Lochboehler's case seems to point to a relapse of typhoid, but the symptoms were not such as are usually found in typhoid fever. Dr. Lochboehler did not mention the nervous manifestations. I saw the child four days before its death, when the manifestations of tubercular meningitis in its last stage were most marked. I think a great deal depends upon the stages, in spite of Dr. Roy's claim that they have no weight in making the diagnosis. It is exceedingly difficult, if not impossible, to make a differential diagnosis during the stage of irritation without previous history of tuberculosis either in the individual or his family. At the height of the stage of irritation one should be able to make the diagnosis from the cerebral manifestations, and later when compression occurs, differentiation is very easy, as the clinical picture is then complete. In this disease the temperature is low, and yet the cerebral manifestations are very marked.

I have in mind the case of a little girl at Children's Hospital. She had fever, and her history was very much like typhoid, but the temperature was not high enough to account for the cerebral symptoms, and the appearance was that of tubercular meningitis. The symptoms remitted, the temperature came down, and it looked as if the child would recover. I contended that these were remissions, and that the stage of compression would occur later, and that she would die. This belief was also concurred in by Drs. W. W. Johnston and Acker, and confirmed later by the necropsy. I wish to report briefly another case that came into Children's Hospital, with a diagnosis of typhoid fever. I diagnosed it as tubercular meningitis at the first visit. The patient was male, colored, seven years of age, no history of tuberculosis, and father and mother in good health. Child had been well up to his fifth year, when he had measles with pertussis, but entirely recovered and had

been well up to the present attack. When first taken sick with this attack he complained of pain in head and back of neck and lumbar regions. The child appeared to be well nourished. He had vomiting, lay on his back with his knees drawn up, head retracted and drawn slightly to one side, and did not notice anything, conversing reluctantly. His tongue was coated and flabby, constipation was present, but there was no enlargement of the liver or spleen, and the appetite was poor. Temperature was about 103, pulse ranging from 120 to 130. The blood was examined and malarial organisms found. He was very restless and screamed with pain in frontal region. Respiration of Cheyne-Stokes variety. He took his nourishment badly. The child lived from October 7 to October 19. The necropsy confirmed my diagnosis of tubercular meningitis."

Dr. LAMB : "I understood Dr. Acker to quote Dr. Holt as reporting a case in which tubercular lesions appeared in quite a number of viscera and meningitis also, but not tubercular meningitis. There are cases reported of simple meningitis where tubercular lesions have been found in other organs where the tubercle bacillus had passed to the brain, and are so small that they cannot be seen with the naked eye, and unless minute examinations are made in such cases I should be inclined to consider them tubercular meningitis."

Dr. CLAYTOR : "I saw a case at Garfield Hospital which showed the ordinary symptoms of tubercular meningitis. The only symptom that was doubtful was the enormous distension of abdomen, suggestive of typhoid fever. The autopsy revealed many tubercles in the liver, some few in the lungs but none in the kidneys. I took some of the blood vessels from the base of the brain and put them under a low power microscope and did not find any tubercles, but am still inclined to think it was tuberculous meningitis."

Dr. BEHREND : "I would like to know if any of the gentlemen in charge of the hospitals have ever made any differential diagnosis by means of the lumbar puncture."

Dr. ADAMS : "For Dr. Behrend's benefit, I will say that my colleagues and I at Children's Hospital have not found it necessary to do this. Wentworth, of Boston, Caille and Huber of New York have made these investigations and they do not consider this such a simple operation."

Dr. REYBURN : "It is said, cases very generally die, but I have seen two or three cases improve under the use of iodoform being applied to the scalp after shaving it. To what does Dr. Acker attribute his successful cases ?"

Dr. ACKER : "My treatment generally consists of iodide of potash and iodoform. I believe cases of tubercular meningitis do sometimes recover."

Dr. BARNES : "Wentworth is a good authority on this disease. He has reported in 1896 twenty-one cases in which lumbar puncture was used. A late article in the Boston Medical and Surgical Journal goes into detail in regard to lumbar puncture and its diagnostic value."

Dr. W. W. JOHNSTON : "I wish to report a case of lumbar aspiration. The child was progressing slowly, in a state of coma. A trial of lumbar aspiration was suggested, and Dr. Van Rensselaer was called in and preformed the operation. Three ounces of cerebro-spinal fluid was drawn off. Restoration to partial consciousness followed immediately, but relief did not last long, as unconsciousness returned again almost immediately. I do not know that any other case has ever been aspirated in this city. Death takes place from encephalitis or pressure, as a result of effusion. This operation of aspiration is without danger, and I think it would be well if it could be performed oftener.

"In this connection I would like to speak of another case of tubercular meningitis from infection, without disease of other organs. I was attending a young girl who died of pulmonary phthisis. A small child of five years was in the habit of sleeping with her while she was ill, as the family had meager accommodations. The little child was very healthy and rosy. Sometime after I was called in to see the child. The first symptom was

vomiting and headache, and the disease progressed until death finally resulted. I believe this child was infected through the mouth or nasal passages through the arterial passages to the brain."

Dr. Roy: "I regard irregular temperature as more diagnositic than height. It is not uncommon to see typhoid fever run about 104, and we do not see many cases of meningitis without a temperature of 103. The fever is higher in the afternoon than in typhoid, but at bed-time the fever will go down."

Meeting of November 30, 1898.

The President Dr. Busey in the Chair.

Dr. Wm. H. Gardner, U. S. A. was elected a "member by invitation."

The President appointed the following Essayists:

January 1899, Dr. P. S. Roy, February, 1899, Dr. Mary A. Parsons, March, 1899, Dr. John D. Thomas.

MEMORIAL OF DR. CHARLES MASSEY HAMMETT.

Whereas an inscrutable and all-wise Providence has summoned from our midst our friend and fellow-member, Dr. Charles Massey Hammett:

And whereas through his departure this Society has lost one of its oldest and most respected members:

One who has devoted himself conscientiously to the performance of the duties devolving upon him as a physician and a man:

One who has served with credit to himself, the profession and the community as its Health Officer and Coroner:

Be it resolved:—That the Medical Society of the District of Columbia hereby express its profound sorrow at his death, and extends its sympathy to his family in its bereavement.

Wm. C. Woodward, M. D.
J. Ford Thompson, M. D.
James D. Morgan, M. D.
Committee.

Dr. W. Glazebrook presented the following specimen:

(*1*) *Calculous pyelitis.*—H. N. C. white, 48 years. Died November 29, 1898. Up to 14 years of age, frequent desire to micturate, nightly incontinence of urine. Developed urethritis when 28 years of age, one year later had a fall striking right side followed by pain in back, with frequent and painful micturition. When 41, urethral stricture developed, followed by rupture of the urethra, with extravasation into perineum, followed by an abscess which ruptured, leaving urethro-sacral fistula. This was closed by operation, partially successful. When 43 suffered from severe pains along course of ureters, especially the right. These attacks were frequent and severe for a year, then passed off, followed by cystitis. At this time stone was removed by crushing and delivery from urethra. Marked improvement followed.

A year later pains along right ureter returned. August 14, 1897 a stone was removed from the bladder. August 28, 1898, another stone was removed from bladder. This last illness began November 21, 1898. Severe renal colic, nausea and severe pain in left lumbar region; sp. gray. 1,014 with albumen, no casts, urine very scant, and passed 8 ounces in 24 hours. Nausea and vomiting increasing. Nov. 23, severe chill, temperature 105°, vomiting incontrollable. Urine scant, muddy contained albumen and blood, soreness and

pain increasing. Uræmic symptoms, with more marked suppression of urine, came on rapidly and patient died November 29th, 1898. I performed an autopsy upon him the same day at the Columbian University Hospital. Markedly jaundiced. A complete autopsy was denied, only allowed to open the abdomen. The right kidney weighted 6 ounces, cortex scarred, adherent. The pelvis markedly enlarged in comparison with the size of the organ. Ureter very greatly thickened throughout and in places distended to the calibre of ⅓ of an inch, also very fibrous, there was marked narrowing near the bladder. Right kidney weighted 16 ounces, dark venous color, very soft and pulpy. Pelvis greatly distended as are the calicis, marking indistinct. A large area in the upper and lower portions of the pelvis had been badly torn, (no doubt due to the sharp pointed calculus, which was found imbedded in the left ureter 3 inches below the pelvis, but which was freely movable down to this point and by change of position would drop back into the pelvis.) The ureter was distended to ½ inch down to the point reached by calculus.

There were small clots below and above the stone in the ureter. It was also noted that this ureter was dilated and thickened as the right, even below the impacted stone. The calculus was irregular in shape and weighed 20 grains. The bladder was greatly thickened and contained 1 ounce of thick, bloody, muddy urine.

The common bile duct was only partly patulous, but no gall stones were found. The capsule of the left kidney was thickened and adherent, there were also numerous small cysts on its surface. A stricture of the uretha was also noted, anterior to the neck of the bladder and there was a marked increase of connective tissue new growth in this situation.

Dr. R. L. Mauss presented the history and pathological specimen of a case of—

Calculous pyelitis with coexisting biliary calculi and presence in blood of astivo-autumnal organisms.—Mrs. C., aged 42, had in 1884 undergone two perineorrhaphies involving the sphincter and rectal wall, a peritonitis being the sequela of each operation. In the following year a perineorrhaphy was again necesssary after a birth; during which operation a perirectal abscess was discovered, which also necessitated operative measures. A long illness followed, covering a period of fifteen months, which was diagnosticated as septic fever. The patient apparently recovered from this illness, although "a rigor would appear occasionally."

The health of the patient continued fairly good until 1891 when, during an epidemic of influenza, she developed a persistent bronchitis, lasting about three months. A period of health then intervened until January, 1896, when she sufferred an attack of peritonitis, lasting until April of that year.

A urinalysis proving negative, a gynecologist of another city was consulted, who strongly advised an ovariotomy, which was agreed to by the patient and her family.

The ovaries and tubes, though reported by the operator as being free from disease, were removed; peritoneal adhesions which were found were broken up and the patient discharged as relieved of her sufferings.

On her return from the sanatorium the same conditions recurred, a peritonitis lasting several weeks, with all the old symptoms much exaggerated. These paroxysms were all ushered in with a

rigor, followed by a slight elevation of temperature, with intense abdominal pain and tenderness, tympany, with a persistent nausea and an after-proctitis; the latter complaint lasting from five days to several weeks. The pain being always distinctly abdominal and invariably followed by a proctitis. These attacks recurred with increased frequency, when in October, 1898, the rigors having developed into distinct chills with an elevation of temperature three or more degrees, quinine was given with good results. But the nausea and rectal diarrhea proving as persistent as in former paroxysms the drug was discontinued, its administration not being admissable either by mouth or rectum. The chill and fever however recurring with daily frequency, and the colitis having been meanwhile corrected, on October 31st the quinine was again resumed via rectum, with an immediate cessation of the symptoms.

During this time a hydronephrosis developed with renal pain lasting several days.

Repeated urinalyses showed a sp. gr., varying from 1006-1011, with sediment, chiefly pus, and a slight trace of albumen in each specimen.

On November 2d as a therapeutic test the quinine was discontinued, but the chill and fever recurring that day, the drug was resumed, with as before, an abeyance of these symptoms.

The anti-malarial treatment was continued until November 4th, the patient then being in a state of cinchonism. From that time her condition assumed a favorable aspect, nourishment, principally liquids and semi-solids, with stimulants, being freely given and assimilated.

On November 19th, the chill and fever recurred, and quinine not aborting these symptoms a blood examination was made by Dr. William B. French, which showed the presence of astivo-autumnal organisms.

The quinine being again resumed, but still with negative results, it was discontinued and attention given entirely to fostering the strength of the patient, it being necessary from the extreme irritability of the stomach to administer all nourishment by rectal enemata.

The chills recurred with greater frequency and severity, two and three paroxysms occurring in the 24 hours and lasting from fifteen minutes to one and a half hours; the mental faculties being unusually clear and active and the patient being conscious to within a few moments of her death, which resulted on the morning of November 26th.

The necropsy was performed November 26th, by Dr. William B. French with pathological report by Dr. D. S. Lamb. Liver about normal in size and shape; flabby; marked portal congestion; lobules pale, probably some fatty degeneration. Hepatic and cystic ducts patulous; common duct not included in specimen but must have been patulous because biliary canals are not dilated. Gall bladder of usual size; contained 3 large and 3 small facetted calculi (no doubt cholesterine,) and a little greenish stringy bile. No perihepatitis; no pericystitis; no cholecystitis; no peritonitis. Spleen somewhat enlarged, shape normal; capsule somewhat puckered as if the spleen had been still larger; some congestion. No perisplenitis. Kidneys. Condition almost exactly the same in each. Weight of each 8 ounces; about half again as large as normal; substance tough. Capsules had been removed and the very uneven surface showed no tearing, so that the capsules could not have been

adherent from inflammation. Therefore no perinephritis. Left ureter had not been brought with specimens. Cortex pale; not at all or very little diminished in substance. Pyramids somewhat flattened at apices; mottled red and white. Infundibula much dilated and distended with turbid fluid, doubtless urine and pus, and flocculi and sediment, soft and brownish, probably altered clotted blood and urinary deposits; mucous surface showed red injection. Pelves blocked, each, with a brownish calculus encrusted with soft recent deposits. The fat in the hilum of the kidney was increased in amount, and firm; and the ordinary loose connective tissue around the vessels was increased and indurated. In the infundibula of left kidney were many facetted brownish calculi about size of pinheads. Right ureter perhaps a little dilated, but patulous and without local contractions or dilatations; and no surrounding inflammation. No evidence of suppuration of biliary ducts.

It would appear from the history of this case that the several attacks of so-called peritonitis were really paroxsyms of renal colic, and that a calculous nephritis had been present possibly since 1884. These facts together with the obscurity of the symptoms and the long period of suffering endured by the patient makes the case one of extreme interest from a diagnostic standpoint.

The early perineorrhaphies with resultant hypersensitiveness of vagina and rectum in line of suture, were a source of permanent annoyance and suffering, and may perhaps have diverted the attention of both the patient and physician from other renal symptoms which may have been present.

Aside from the interesting complications of the case is the absence of symptoms of hepatic disease; probably accounted for by the complete impaction of the gall bladder with large calculi, the hepatic ducts having shown no pathalogical indication of the passage of a stone. Although it frequently happens that hepatic or biliary calculi may be present without distinctive clinical symptoms.

An interesting feature of the case lies in the coexisting renal and hepatic calculi, these cases evidently being of rare occurrence; the only similar case of record being that noted by Jacquenet.

It might not be amiss to note that when a persistent recurrent peritonitis is met, with a negative urinalysis, and a difficulty in diagnosis, and where, as in the present case, an exploratory incision is hardly justifiable or from other causes inadmissible, skiagraphy might be resorted to with good results, as advocated in a recent contribution by Leonard.

In any event the use of the Roentgen Rays would probably clear an hitherto impenetrable clinical atmosphere and possibly be the means of saving the life of the patient.

THE DIFFRENTIAL DIAGNOSIS OF SOME DISEASES CHARACTERISED BY FEVER OF INTERMITTENT TYPE WITH MORE OR LESS FIXED INTERVALS.

Dr. William W. Johnston, read a paper with the above title which dealt with the differential diagnosis between certain forms of diseases in which intermittent fever of regular occurrence is one of the principal symptoms. The fact that mistakes in diagnoses are often made in such cases and that they are common-

ly mistaken at first for malarial intermittent fever justifies the review and comparison of the characteristic feature of each form.

The paper is published in the Philadelphia Medical Journal, February 25, 1899, in full with illustrative charts.

The following summary embodies the principal points upon which the differential diagnosis is based.

Malarial Intermittent Fever.

1. One daily attack; paroxysm in morning; attack may be every 3 or 4 days.
2. Total duration of three stages 10 to 12 hours; regularity of stages, and fixed interval.
3. Increased urea during attack.
4. Absence of leucocytosis; fewer red and white corpuscles.
5. Sallow tint of skin; pale lips; herpetic vesicles, lips and nose.
6. Enlarged spleen.
7. If quotidian the rhythm of fever points to double quartian or triple tertian infection.
8. Malarial parasites in blood.
9. History of case; previous attacks; residence.
10. Effect of quinia in arresting disease.
11. Usual result recovery.

Hepatic Intermittent Fever.

1. One daily attack, 3 to 4 p. m.; or attack every 3 or 4 days.
2. Duration of 3 stages 16 to 18 hours; irregularity in each stage.
3. Diminished urea during attack.
4. Icterus after attacks of pain, (gall stone colic,) color deepens after fever.
6. Cholesterine calculi in stools.
7. Spleen not enlarged.
8. No micro-organisms in blood.
9. Effect of quinia negative.
10. Usual result recovery, death not uncommon.

Intermittent Fever of Rheumatism.

1. One attack daily, midday.
2. Duration 10 to 12 hours.
3. No enlarged spleen.
4. No parasites in blood.
5. History of rheumatism.
6. Pains and stiffness in articulations; subcutaneous nodules about joints.
7. Quinia no effect—curative effect of salicylates.
8. Result, recovery.

Fever of Acute Tuberculosis.

1. Daily paroxysm, middday or early afternoon.
2. Variations; intermittent, remittent, then intermittent.
4. More or less regularity of stages; duration of attack 10 to 12 hours; sweat before midnight, exhaustion after sweat.
4. Leucocytosis; no micro-organisms.
5. Urea increased during attack.
6. Pallor of skin; lips and mucous membranes red; flushing of one or both cheeks, during fever.
7. Rapid loss of weight and strength; dyspnœa.

Symptoms and physical signs of pulmonary tuberculosis or of localized tuberculosis elsewhere.

Infectious Endocarditis.

1. One, two or more paroxysms daily; no fixed hour.
2. Duration of three stages, 8 to 10 hours; interval sometimes fixed.
3. Marked leucocytosis.
4. Spleen may be enlarged.
5. Micro-organisms in blood—streptococci.
6. Quinia no effect.
7. Endocardial murmur; usually mitral systolic.
8. Profound anaemia; rapidly progressing exhaustion; marked nervous and digestive disturbances.
9. Death in a few weeks to several months.

Intermittent Fever of Chronic Valvular Heart Lesions.

1. One daily paroxysm in morning; irregularity in duration, with recurrences. Rarely two daily paroxysms.
2. Duration of attack, 10 to 14 hours.
3. Hyper-leucocytosis.

4. No micro-organisms in blood.
5. No enlarged spleen.
6. Existing endocardial murmur and symptoms of chronic mitral or aortic lesion.
7. Quinia no effect.
8. Result fatal in 2 to 12 months.

Fever of Syphilis.

1. One attack daily, afternoon or evening.
2. Duration of attack and interval fixed.
3. No hyper-leucocytosis.
4. Liver and spleen may be enlarged; tenderness near region of liver.
5. History of primary infection and of constitutional syphilis.
6. No effect from quinia: curative effect of antisyphilitic treatment.

A case of syphilitic fever. Dr. D. W. PRENTISS reported a case of spyhilitic fever accompanied by chart of temperature and pulse.

The interesting feature of the case was the difficulty attending diagnosis. The temperature was normal or below normal in the morning and rose to 101.5° to 102° in the evening. Pulse averaged about 75 in the morning and about 82 in the evening.

The diagnosis seemed to rest between malarial fever, typhoid fever and tuberculosis. The fever continued as above until the 19th day.

Quinine had no influence over it. Other symptoms were sub acute pharyngitis and exhaustion.

There was throat cough and expectoration of glairy mucus.

The blood was examined for plasmodium and by Widal's test, and the expectoration for bacilli, all with negative results.

The patient had had typhoid fever ten years before.

The respiration was exceptionally full and easy.

An ulcer developed on the tibia which looked suspicious though examination detected no other physical signs of syphilis. However from failure of the treatment, specific treatment was determined on.

This consisted of iod. potassium and protiod. mercury and was commenced on the 18th day of the disease. That evening the temperature was 102.3°. The following evening it was 99°. And later for six days was subnormal both morning and evening and attendance was closed. The effect of the specific treatment was little less than marvelous. The pharyngitis disappeared, the ulcer on the tibia healed promptly, and the fever fell to subnormal in 36 hours and so remained.

The general health improved accordingly, appetite and strength returning.

Dr. Prentiss also reported briefly a case of typhoid fever in children exhibiting a typical chart of the same. And cases of continued fever of convalescence after typhoid and of continued fever following the grip showing temperature charts of each.

And in conclusion, discussed the importance of a correct diagnosis of this class of cases.

The Medical Society of the District of Columbia is responsible only for the "Transactions" puplished in this journal. It is entirely free from any connection with the Editorial and Basiness management.

THE
NATIONAL MEDICAL REVIEW.

VOL. VIII. WASHINGTON, D. C., APRIL, 1899. No. 11.

Original Articles.

A REPORT UPON THE EXAMINATION OF MILK FURNISHED BY THE PASTEUR MILK LABORATORY OF WASHINGTON, D. C., FROM JANUARY 1, 1898, to FEBRUARY 1, 1899.

BY E. A. DE SCHWEINITZ, PH. D., M. D.
[For the Committee.]

In December, 1897, a committee consisting of Drs. Adams, Kober and de Schweinitz, was appointed by the Medical Society for the purpose of giving general supervision to a dairy and milk laboratory which the proprietor proposed to have conducted in accordance with the most modern requirements, and suggestions of this committee.

As a part of this inspection I undertook a regular bacteriological and in part chemical examination of the milk furnished by this laboratory. It was decided at the outset that two sorts of milk should be supplied to the public; the one pasteurized, the other to be called *sanitary*, collected with every possible precaution, so that the dangers of contamination should be limited and the number of bacteria per cubic centimetre kept at a minimum. The company agreed to send me samples of the milk twice each week. In addition to these, during October, November and December, 1898, I had made daily examinations of the sanitary material obtained from a friend, who received the milk as any other regular customer. The results in general, as may be seen, of these examinations have been satisfactory. They have shown very clearly the possibility of obtaining milk that contains a minimum number of bacteria per cubic centimetre, and have also demonstrated that carelessness in handling the milk increases this number very materially. The number of bacteria per cubic centimetre in the pasteurized milk has been found as a rule to be less than two hundred. In some cases no bacteria could be detected. In four instances the number of bacteria per cubic centimetre increased to over five thousand. A comparison with the number of bacteria in the sanitary milk on these same dates showed a very much larger number of germs than should have been present if proper precautions had been used. In 113 samples of sanitary milk examined, the number of colonies per cubic centimetre has in the majority of cases varied from two hundred to five thousand. Three samples showed over fifty thousand colonies per cubic centimetre; three others over twenty and less than fifty thousand colonies per cubic centimetre; one over fifteen and less than twenty thousand per cubic centimetre; two

others over ten and less than fifteen thousand; two others over five thousand and less than ten thousand. Since October, 1898, the percentage of fat has been fairly uniformly over four. Before that date it often was found to be two to three-tenths below the amount guaranteed, viz: four per cent.

In April and May, 1898, I obtained through the Health Officer, Dr. Woodward, and in January, 1899, through one of the health office inspectors, Dr. Turner, samples of milk taken from different dairy wagons in the city. Thirty-one different samples of milk were examined. Of these one showed only about four thousand bacteria per cubic centimetre; one, two thousand five hundred per cubic centimetre; five others between ten and fifteen thousand; six between thirty and fifty thousand per cubic centimetre and the remainder more than fifty thousand per cubic centimetre, in several instances running over one hundred and fifteen thousand per cubic centimetre. In those cases where the number of bacteria per cubic centimetre was small, it is fair to presume that the milk was collected with considerable care. The other cases speak for themselves.

The danger of communicating disease by means of the milk supply has been reviewed so often and so thoroughly that it is not necessary to take up the question again. In a recent article Kanthack and Sladen reported the examination of milk supplied from sixteen different dairies to Cambridge, England. Nine of these different samples produced tuberculosis in guinea-pigs.

When we consider, however, that, in the milk supply of our large cities the number of bacteria per cubic centimetre has been found to vary from thirty thousand to eighty-five million, and has often been found as high as the number of bacteria in the sewage of several towns, namely between one and four million per cubic centimetre, the value of the number of bacteria per cubic centimetre of milk as indicating the care which has been used in collecting and handling the milk is at once apparent. One of the German authorities on the subject of sanitary milk, Bitter, claims that the maximum limit for milk that is fit for food is fifty thousand germs per cubic centimetre. On this basis, the milk from only thirteen out of thirty-two dairies, which has been examined in this city, would be fit for food. The results of the examinations which we have made show that it is possible to keep the bacterial content down below fifty thousand per cubic centimetre, and it would not be expecting too much to demand that no milk should be sold if it was found to contain more than this number.

In a recent article in the British Medical Journal, Dr. Nasmyth calls attention to the various laws in force in different countries in regard to the examination of milk. In Paris special authorization is required for cow-houses, which are placed under the control of inspectors. Large dairies are included in the second class of offensive and dangerous trades. The dairies are subject to regulations.

The walls must be faced with marble or tiled with cement. Examination of the milk is made by inspectors who send samples of milk to the laboratories. Nocard states that animal tuberculosis is now rare in Paris, because the animals are not kept longer than a year before fattening and slaughtering.

In Stockholm since 1886, the sale of milk can take place only in dairies where one room is specially set apart for this purpose, or in public places and markets under specially prescribed con-

ditions. A written permission must be obtained from the Bureau of Hygiene before the milk shop can be opened. The places used for the sale of milk must be well lighted, well ventilated, conveniently arranged and kept very clean. Such places must not be used until they have been approved by the Health Commission. They must on no account be used as sleeping rooms or kitchens, nor must anything be put in them which would infect the milk or give it a bad taste. The Bureau of Hygiene must be informed immediately if there is a contagious disease in houses near the dairy. In such cases the sale of milk is stopped until the necessary precautions have been taken for preventing its spread.

Germany forbids the sale of milk from diseased cows. Milk stores must not be used as bed-rooms or sick-rooms or be in direct communication with them. Cow keepers must permit the examination of their cows by veterinary surgeons. The sanitary laws of all Danish towns are good, but the milk inspection and the sanitation of the Danish villages are very poor.

In Berlin there are two large milk establishments conducted on a basis similar to that of the Copenhagen supply.

In Philadelphia the Board of Health requires the tuberculin test for dairy cows, and after 60 days' notice a milk producer who supplies the city and fails to furnish a clean bill of health based on the results of the test may have his milk rejected. Similar regulations are in force in New York. In New South Wales similar rules are also being enforced.

Under the English order of 1885 it was required that registration should follow inspection and a report that the premises, the water supply, lighting and ventilation were satisfactory. A pure water supply should be insisted upon in abundance, and it should be pointed out that cows grazing on lands manured with police manure may have their udders specifically infected, and that similar danger arises from cows wading in ditches polluted by sewers. No dairy regulations can be considered sufficient which do not provide for the exclusion of tuberculous cows. Persons suffering from tuberculosis should not find employment in dairy work. It should be a penal offence for any one to take a milk can or vessel from an infected room to a dairy or milk cart. The danger of creameries ought also to be considered, as the milk sent from an infected farm may be the means of spreading and widely scattering an epidemic. The use of sterilized milk ought to be encouraged. The larger the air space for the cows, the more light and sun-shine, and cleaner the cows and stable are kept, the fewer micro-organisms gain access to the milk.

As would of course be expected the samples of pasteurized milk which we have examined contained a very much smaller number of bacteria than the sanitary, and in most cases where the pasteurization is properly carried out one should ordinarily find few or no bacteria. The very slight taste which may be imparted to the milk when this process is carried out is really unobjectionable, and after a very short time is practically unnoticeable.

In regard to the work of the Pasteur Laboratory of this city, we may say in general that the larger number of samples examined have shown very satisfactory results. Eighteen samples during the year from time to time indicated carelessness. When properly handled the milk from this laboratory appeared to contain a smaller number of bacteria per cubic centimetre than most of the

milk that we have examined from other dairies.

The owners of the Pasteur Dairy have indicated a wish to supply a reliable milk and since December a more uniform article has been furnished than earlier in the work. This is accounted for by a better management at the farm.

It is interesting to note that in some cases where the temperature, as recorded at the Weather Bureau in this city, was high the number of bacteria found in the milk was still low, while in other cases where the temperature was lower the number of bacteria found in the milk was higher than it should have been. The average number of bacteria per cubic centimetre found in the samples of sanitary milk examined between January 1, 1898, and February 1, 1899, was 6,485. The average number of bacteria per cubic centimetre in the samples of pasteurized milk examined during the same time was 324. The total number of sanitary samples examined was 113; the total number of pasteurized samples examined was 82. The total number of samples examined from other dairies was 31, and the average number of bacteria per cubic centimetre in these was found to be 52,000. In all these examinations agar plates were used and the colonies counted after forty-eight hours.

METALLIC SILVER AS A SUTURE AND DRESSING.*

By Francis R. Hagner, M. D.,
Washington, D. C.

Believing it would be of interest to the members of this society, I have chosen for the subject of my paper this evening, the use of metallic silver, considered from a bacteriological and practical standpoint, as a material for sutures and surgical dressings.

It is well known that Marion Sims used silver in the form of sutures, but it was never widely employed until its value was emphasized by Dr. Halsted, of Baltimore.

In 1894, Bolton wrote a paper upon the effect of certain metals upon the growth of bacteria. In his experiments, he found that silver wire or silver foil, when placed in a Petri dish, which has previously been inoculated with a culture of *staphylococcus pyogenes aureus*, would prevent the formation of colonies within an area of an eighth of an inch, though numerous colonies of this micro-organism would be found scattered elsewhere over the plate. So marked was the absence of bacterial growth and development in the neighborhood of the metallic silver that it was evident that this material exercised a very decided inhibitory or destructive effect upon these organisms. Two other metals were found to have a like influence, mercury and copper; but it is obvious that it would be impossible to employ metallic mercury as a suture or dressing, and copper corrodes and becomes decidedly too irritating to tissues. Further, it had been noticed that there is a marked difference in the appearance of silver foil that has covered an infected and a non-infected wound.

Dr. Credé, during a visit to America, saw Dr. Halsted using silver foil and noted his results. He has since made quite a study of metallic silver upon micro-organisms, and maintains that the bacterial secretions acting on the silver, and entering into combination with its oxides, are organic acids, the principal one of which is lactic acid, and that the antiseptic action of silver is due to the lactate of silver so formed.

*Read before the Clinico-Pathological Society, March 6, 1899.

Pure metallic silver in sterile water causes the latter to have a bactericidal action.

I have here four tubes, two inoculated with *staphylococcus aureus* and two with *bacillus pyocyanus* or the bacillus of green pus. In one of each pair of these tubes has been placed a sheet of sterilized silver foil. The tubes which contain no silver foil show almost three times as large a growth as those in which there is silver.

Dr. Credé has also made experiments with gauze soaked in a solution of sterile water and metallic silver, with apparent good results.

Silver wire has been highly spoken of by those who have used it for any length of time, either as an interrupted, subcutaneous or buried suture.

Of course it is impossible to completely sterilize the skin on account of the *staph epiderm. albus*, which microorganism inhabits its deeper layers and is the commonest cause of stitch abscesses. If after thorough cleansing of the healthy skin, a silk, or any other suture except silver, be passed through it and then placed in a culture tube, it will invariably cause a growth of albus. Silver, on account of its bactericidal properties, will rarely produce a similar phenomenon. For this reason, stitch abscesses are very rare when silver sutures are used. In nearly one hundred cases of hernia operated upon at the Johns Hopkins Hospital, in which subcutaneous silver sutures were employed, there was suppuration in only two and both of these were strangulated cases in bad condition.

Another advantage of silver wire as suture material is that it never breaks or becomes loose after being placed in position. The ease and rapidity with which it may be sterilized is an additional recommendation; being boiled for five to eight minutes along with the instruments to be used is all that is necessary.

It is sometimes claimed that silver wire, when it has been employed subcutaneously, is difficult to remove; but if the following rules are observed, no trouble will be experienced; never run the same suture over a longer distance than three to five inches, but employ others until the incision is closed, and do not sew around an acute angle in an incision, but instead, sew up to the angle and then begin with another suture. It is well to leave a free end of the silver wire at the beginning and end of the suture. This can be twisted loosely over the dressing next the wound and will help to hold it in place.

In removing silver wire suture, cut one end of the suture close to the wound and then by a quick jerk on the other free end, the wire is easily removed.

I have used silver wire several times in operating upon lacerated perineum with very favorable results, there being absolutely no irritation about the suture.

It has been argued by some that silver wire, employed as a buried suture, will cause pain, inconvenience or irritation; but I have never seen any such result, and have never had a patient complain of any pain after recovery from an operation in which buried silver sutures are used.

The only locality in which the buried suture cannot be employed is in the gluteal region; for there continual pressure sometimes causes pain. A good many surgeons use silkworm-gut as a buried suture, and during the past year's dispensary work I have removed several of these from unhealed sinuses. But I have never seen a silver wire suture cause a sinus and have to be subsequently removed. In the two hernia cases which I have previously mentioned, in which there was superficial suppuration, the skin sutures were removed and the pus evacuated. The buried silver wire was plainly visible; and after

cleansing and redressing the wound, granulations covered the deep silver sutures and the wounds healed promptly.

The buried suture, in the form of the mattress suture of Halsted, is especially useful in closing abdominal wounds and those after hernia operations. Here the suture is placed, and the ends cut and turned into the tissues with an artery forceps.

I here show cultures which contain sutures of horse-hair, silk, silkworm-gut and silver. In all the cultures, excepting the one containing the silver wire, the colonies grew up to, and in some cases covered, the sutures, while in the culture containing the silver wire there was an area around the suture of from an eighth to a sixth of an inch free from colonies. I have here two guinea pigs, in each of which an incision has been made in the abdominal wall. The edges of one of the wounds were brought together by and over an over stitch of silver wire, the other with silkworm-gut. A virulent culture of *aureus* was then rubbed into the sewed wounds. At the end of twenty-four hours, the wounds sewed with silkworm-gut showed swelling and the formation of stitch abscesses, proving that the micro-organisms had followed along the sutures; but no swelling or stitch abscesses could be found in or about the wound where silver wire had been used.

As a dressing, silver foil is employed. The variety used is called silver leaf and is sold in books, like gold leaf, for fifteen cents per dozen sheets. These sheets when cut in half are of the proper size.

Silver foil exerts a decided antiseptic action on a wound without causing the least irritation. It never produces dermatitis as does iodoform and, at times, bichloride of mercury. Moreover the silver dressing does not stick to the wound which is the case with sterile gauze especially if there be a slight serous exudate. Hence, it may be left on wounds until they are perfectly healed. On granulating wounds it must be changed oftener, but they do very well under it and the tendency to the formation of soft granulations seems to be diminished, while at the same time, being non-toxic, silver foil may be used to cover a granulating wound of any size, even the largest.

In small wounds of the face silver foil can be placed over the wound and collodion painted over it, thus dispensing with a bandage, and the foil prevents the pain caused by the collodion coming in contact with the injured surface.

Sterilization of silver foil is accomplished in the following manner: The foil, as it comes in book form, is placed between two small boards, then wrapped in a towel or a piece of linen, placed with other dressings in Arnold's sterilizer and subjected to a current of steam. When the dressing is to be applied, it is picked up with the sheet of tissue paper covering it and placed over the wound, the paper then being removed.

Here are two Petri dish agar cultures of aureus, in one of which has been placed a sheet of sterilized silver foil; in the other a piece of sterile gauze. In the culture containing the silver foil, there is an area of one sixth of an inch around the margin of the silver that is entirely free from colonies, while in the dish containing the gauze the colonies grow into the meshes of the substance.

The advantages of silver as a material for sutures and dressings may be summarized as follows:

1. No evidence of suture irritation;
2. No stitch abscesses;
3. No area of dermatitis about the wound;
4. No toxic effect when used in or over large granulating wounds.

THE NATIONAL MEDICAL REVIEW,

EDITED BY

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WITH THE CO-OPERATION OF

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AND

THE MILITARY SURGEON,

A SUPPLEMENT.

OFFICE: 1408 Twenty-first Street, N. W.

WASHINGTON, D. C., APRIL, 1899.

Notices and Reviews.

SEXUAL INPOTENCE. By Victor G. Vecki, M. D. Philadelphia. W. B. Saunders. 1899. Price, $2.00 net.

Krafft-Ebing says that the sexual function forms the most powerful factor in individual and in social life. It is a mighty impulse for bringing into action our most effective energies, for acquiring property, for the foundation of a home, for arousing altruistic feelings for a person of the other sex first, and later for one's children, and, in a wider sense, for the whole human family. Dr. Vecki in the book before us, which is from the second German edition, revised and rewritten, does not think it beneath his dignity to busy himself like Enlenburg, Krafft-Ebing, Fürbinger, and Edward Martin, with the solution of the perplexing problems of the sexual life, and he hopes before long the conventional lies with which every book, every pamphlet on the subject is swarming, will disappear, and Mantegazza's satire become obsolete. "Difficult problems cannot be solved if we run away from them or if we avoid them; and still many a physician, many a philosopher, tries to solve the most burning questions of modern society in the manner of the baby who believes that he can escape the most threatening dog by closing his eyes." No one cares to make the sexual function a subject of conversation, yet no one denies that it is of very great consequence to the individual as well as to society in general. Dr. Vecki believes that every being instinctively longs for enjoyment. The desire for enjoyment is certainly justified, and only hypocrites or people with limited views in general can demand that man shall work and fulfil duties without the moments of gladness and gratification that are so scarce in comparison to the bitterness of life. As Renan says: "La nature veut que nous jouissions." In the chapter on treatment the author says that impotence, always difficult to cure, is often incurable. The great number of methods and remedies recommended speaks for the small value of most of them; and yet there is hardly any one of them that could be entirely dispensed with, because there are cases in which the one or the other may be of some use. Altogether we have no doubt that this work may serve some useful purpose yet we are convvinced that some of its teachings are pernicious and would prove harmful to many a young graduate lacking in judgment, discretion, and experience.

AN AMERICAN TEXT-BOOK OF DISEASES OF THE EYE, EAR, NOSE, AND THROAT. Edited by G. E. de Schweinitz, M. D. and B. Alex. Randall, M. D. Philadelphia. W. B Saunders. 1899. Price, cloth, $7.00 net. Sheep or half morocco, $8.00 net.

The American Text-Book series has demonstrated its worth and has had its reward in the appreciative reception which has been accorded to it. There is no doubt that this new aspirant for favor will take rank with the other volumes of the series. In the portion of the work devoted to the eye, its embryology, anatomy, histology, physiology, diseases, and injuries are discussed in twenty-four sections by twenty-four authors; its operative surgery in seven sections by as many authors; while certain practical details in the examination for color-blindness among railroad employés, etc., receive attention in an appendix containing five sections. In the portion of the work devoted to the ear, its anatomy, physiology, diseases, and injuries are discussed in thirteen sections by fourteen authors; while diseases of the nose and throat are described in twenty sections by nineteen anthors. Certain novel features not usually found in text-books may be noted: special articles on the standards of form and color-vision required in railway service, the Röentgen rays in ophthalmic surgery, the practice of opthalmic operations on animals eyes, the most important micro-organisms having etiological relationship to ocular disorders, etc. The labors of the eminent teachers here brought shoulder to shoulder have resulted in the production of a work that will afford a good introduction for the beginner, a valuable handy reference-book for the practitioner, and at least quicken some weakening memories in the advanced specialist. The title of the book is an appalling one and at first blush it seems impossible to comprise in one volume studies of the eye, ear, nose, and throat. Careful examination of the book, however, will demonstrate that each of these branches has received text-book-treatment within the space assigned whilst their important cor-relations have been better brought out by such juxtaposition. As the editors truly say, specialism has often been carried much too far in the exclusion of attention to adjacent fields. The oculist cannot dispense with a fair working knowledge of affections of the nose and its accessory cavities; nor should the aurist have to learn at second hand the important teachings of the ophthalmoscope as to his cases. As was said in the beginning this work is a valuable addition to the American Text-book series and is destined to take a front rank in the medical publications of the year.

PROGRESSIVE MEDICINE. Edited by Dr. Hobart A. Hare. Lea Bros. and Co., Philadelphia.

We heartily congratulate both the editor and the publisher of this quarterly digest of advances, discoveries, and improvements in the medical and surgical sciences. "Progressive Medicine" differs radically from the many Year Books, Annuals, or Abstracts in which, by mere collation of material, an effort has been made to represent medical advance. The mass gathered in such publications is left for the reader to sift and digest, a mental process which the immensity of modern medical advance has rendered a virtual impossibility for the average reader who must now-a-days rely upon the specialist to reduce science to applicable form. Recognizing this fact Professor Hare has secured a corps of the most capable and advanced men, each of whom tells in his own language, and in the form of an interesting narrative, the story of medical progress in his own special line. The four volumes which will be published each year will cover the entire round of practical medicine in the broadest sense, and their appearance at intervals of three months, instead of annually, will ensure the more rapid diffusion of knowledge which is required of our times. The volume before us, which has just been issued, is a substantial octavo of nearly 500 pages, illustrated with engravings and colored plates, and as the yearly price for the set of four volumes is only $10, it is evident that an exceedingly large demand is anticipated. That these expectations will probably be fulfilled is a fair prediction in view of the admirable manner in which the able contributors have executed Professor Hare's novel and ingenious plan.

Progress of Medicine.

GENERAL MEDICINE AND SURGERY.

UNDER THE CHARGE OF

EDWIN B. BEHREND, M. D.

Fatal After-Effects of Chloroform.

The author reports two cases in which women, after undergoing severe gynecological operations, died on the third day with symptoms of heart exhaustion and pronounced kidney disease. In both cases, fatty degeneration of the heart, liver and kidneys was found, which was believed to be due to prolonged narcosis. The author investigated the amount of fat in the liver of dogs and donkeys before and after anesthesia. He was able to show that fat appeared in the liver after chloroform narcosis and did not disappear for days and even weeks. After ether, fatty degeneration of the liver also occurred; but it never reached the extreme grade observed after the use of chloroform. The author also warns against repeated anesthesia in rapid succession, and advises that care be exercised in employing anesthetics for diagnostic purposes. Schenk, (F). Zeitschr. f. Heilkunde, 1898, xix, 93.

The Functions of the Stomach.

The functions of the stomach are threefold—secretion, motility and absorption. The most important of these is motility, and v. Mering has shown that there are arrangements in the intestine which regulate the evacuation into it of the contents of the stomach, and which prevent overloading of the latter. In diseases of the stomach which lead to pyloric stenosis, in order to again set up alimentary circulation, the operations of pyloric resection or gastro-enterostomy are done. Whether the motor function of the stomach after these operations becomes normal was not known until now v. Mering has proven it through experiments upon animals. In order to determine the absorptive capacity of the stomach wall, the author recommends the following procedure: A mixture is prepared containing about 90 gm. of glucose, 5 to 6 gm. of yolk of egg and 300 gm. water. Two hundred and fifty cc of this mixture are introduced into the empty stomach and the remainder serves for the exact determination of sugar and ether extract. Two and one-half hours later, the contents of the stomach are expressed through the stomach tube and the relation of the fat to the sugar determined. If no absorption has taken place, the relation remains the same in both portions of the test mixture. In healthy individuals, the fat in the sugar mixture was always found to be diminished. This could only have resulted as a consequence of the absorption of fat by the stomach wall. The amount of diminution is a measure of the absorptive capacity of the stomach. v. Mering, (J.) Zur Funktion des Magens. Verhandl. d. Congr. f. inn. Med., 1897, page 433.

Death With Pronounced Renal Symptoms in a Case of Marked Dilatation of the Stomach.

A man, 43 years of age, with an enormous dilatation of the stomach, who was very weak and emaciated, drank one day, while suffering from extreme thirst, 10 litres of water, after which he became suddenly stuporous. One half a day later, convulsions set in which recurred paroxysmally. Thirst and vomiting continued without cessation, stupor deepened into coma, respiration became irregular and of the Cheyne-Stokes type, pupils contracted and did not react to light, total loss of knee reflex. Death occurred at the end of the third day. Autopsy revealed an enormous dilatation of the stomach due to a cicatrix below the pylorus. During the period of coma the patient excreted but 100 cc

of urine. To explain the severe nervous phenomena, the author takes into account the thickening of the blood and the resemblance of the clinical picture to uremia. The latter view is the more probable, inasmuch as the diminished urinary excretion indicates an auto-intoxication due to retained urinary constituents. v. Jürgensen (T.). Deutsch. Archiv. f. klin. Med., Bd. lx, Hft. 4 and 5.

Male Fern Poisoning.

Among 78 cases of male fern poisoning, 33 suffered permanent blindness. In 18 loss of sight was in both eyes; in 15 in one eye alone. Four patients suffered a considerable diminution in visual capacity in both eyes. One patient became blind in both eyes temporarily; three in one eye for a short period only. The anatomical conditions in these cases were generally dilated pupils without reaction, and ophthalmoscopically, the picture of simple nerve atrophy. In 3 cases, tortuosities of the veins and hemorrhages into the retina were observed. The author noticed in one case, where an extract of the pomegranate rind had been ingested, the occurrence of diminished vision of a high grade in one eye while the other remained unaffected. After the use of potassium iodide, sight was somewhat improved; but the picture of simple retinal atrophy remained. Sidler-Huguenin. Correspondenzbl. f. Schweiz. Aerzte, 1898, Nos. 17 and 18.

Asthma Due to the Dust and Odor of Raw Asparagus.

The author reports a severe case of typical asthma which occurred every time the patient, a cook, prepared asparagus stalks, by scraping, for cooking. Early in life paroxysms of sneezing were produced; but later the attacks became more severe, were associated with oppression in the chest and ultimately became true asthmatic attacks. The patient was never annoyed when eating the cooked vegetable, but only while handling and preparing it in its raw state. The attacks were unquestionably due to the dust and odor of the raw asparagus. The examination of the nose and the other organs was entirely negative. Deschamps (E.) Arch. gén. de méd., 1898, September.

Etiology of Multiple Sclerosis.

The author reports the results of a postmortem examination made in the case of an infant, 6 months old, which died after severe convulsions and contractures. In both hemispheres of the brain, especially about the central convolutions, were found light gray, round, sclerotic masses of cartilaginous consistency, varying somewhat in size. Similar masses were found in the basal ganglia. In the heart muscle, there were discovered masses of a sclerotic nature with an alveolar structure and containing small cysts which proved to be protozoa. Young parasites were present in the muscle fibres and had the appearance of polymorphous protoplasmic granules. The same parasite was found in the brain, and must be looked upon as the cause of the sclerotic masses in the brain and heart muscle. The sclerotic masses described by the author, he believes to be identical with those asssociated with multiple sclerosis. In the above case, also there was a sclerotic encephalitis. The parasites invade the body through the circulation. Inoculations with brain matter caused a parasitic myocarditis in rabbits. The exact nature of the parasite is not known. Jürgens (R.) Berl. klin. Wchnschr., 1898, No. 14.

CLINICAL DIAGNOSIS.

UNDER THE CHARGE OF

ANDREW STEWART, A. M., PH. D.

Demonstrating the Malarial Parasite in the Blood.

I. Prepare blood films in the usual way and let dry in the air; then fix for a few minutes in absolute alcohol. After drying, the fixed blood films are exposed to the vapors of iodine for from ten to fifteen minutes. To this end some metallic iodine is placed in a small glass dish provided with a well-fitting cover, and the specimens, blood-side down upon little tripods of glass or a similar contrivance, so as not to come in direct contact with the iodine. When the specimens present a well-marked yellow color they are removed, carefully dusted off with a camel-hair brush and mounted in a drop of syrup of levulose. The color of the red blood corpuscles is now very like that of the fresh blood somewhat intensified and the malarial organisms appear as in fresh specimens. If the finger has been carefully cleansed and clean glasses have been used, no foreign material will be present to interfere with the examination. Unfortunately the color of the red corpuscles fades after twelve to twenty-four hours, so that the preparations cannot be preserved. For teaching purposes the method will be found very convenient at times when fresh specimens of malarial blood cannot be readily procured.

Simon (C. E.) – A new method of demonstrating the presence of malarial organisms in the blood. Md. Med. J., 1899, xli, 165.

II At the meeting of the Johns Hopkins Hospital Medical Society held Oct. 17, 1898, Dr. Futcher said that during the past winter he and Dr. Lazear had developed the following method of staining dried blood specimens, which was found rapid, convenient and serviceable for office practice.

The blood specimens are made in the usual way described by Ehrlich, making thin films on cover-slips, and then are fixed in a one per-cent solution of formalin in 90-per-cent alcohol. After immersion in this solution for only one minute, the desired stain can be immediately used without washing off the excess of fixing agent. As a staining agent a saturated solution of thyonin in 50-per-cent alcohol is used, of which 20 cubic centimeters is added to 100 cubic centimeters of two-per-cent carbolic acid solution, and this mixture is kept in stock for use as required. It is better to keep it for some time before staining specimens, as it improves with age.

The ordinary smear preparation is first fixed in the formalin solution for one minute, and without washing off the excess of solution, stained with thyonin for from ten to fifteen seconds. Ten seconds generally gives the most satisfactory results. The excess stain is washed off and the specimen, mounted in balsam, is ready to be examined.

The malarial parasites come out distinctly with this stain, and retain the color much better than when stained with methylene blue. The thyonin stain has also been used to bring out the flagellated processes in the estivo-autumnal infections, and some good specimens have been obtained. Ibid, 1898, xl, 52.

Staining the Capsule of the Pneumococcus and the Bacillus of Friedländer.

The following combination gives a clear image, which photographs well:

dahlia—0.5 gram,
methyl green (oo cryst.)—1.5 gram,
fuchsin (sat. alc. sol.)—10 cc,
dist. water—200 cc.

Rub up the dahlia and methyl green in a mortar with part of the water, until dissolved, then add the fuchsin and finally the rest of the water. Prepare the film in the usual way. Flood the cover slip

with the stain and hold over the flame until steam begins to rise. Then place aside for about five minutes, wash in water, dry, and mount in xylol balsam. Treatment of the film with acetic acid does not lead to good results. The above is a good general stain and gives good results with the bacillus typhi abdominalis, bacillus coli communis, and especially with the Klebs-Loeffler bacillus. MacConkey (A.)—Note on staining the capsules of pneumococcus and of the bacillus of Friedländer. Lancet, Lond., 1898, ii, 1262.

Bacteria in the Blood of Consumptives.

The blood of consumptives from several hours to two months, ante morten, was drawn with a syringe from the vena mediana and examined. In eight out of ten patients bacteria were found : in six of these cases staphylococci, in one staphylococci and streptococci and in one staphylococci and puenmococci. It is uncertain whether these bacteria so influence the pathological process that the conditions are made more favorable for the growth of the tubercle bacilli, or vice versa. It is of interest that every time bacteria were found in the blood the diazo-reaction was strongly positive in the urine. This reaction is therefore an indication of the gravity of an affection. Michaelis (M.) and Meyer (Fr.)—Bakterienbefunde im Blute Phthisikern. Charité-Annalen, 1897, pag. 150.

Digestion Leucocytosis.

Patients were allowed to fast for 15 hrs., and were then given a meal of soft-boiled eggs and milk. Two cases of gastric carcinoma, three of anemia, five of gastric atrophy, and three of ulcus rotundum came under observation. In two out of the ten cases of malignant disease there was digestion leucocytosis : in only one of the cases of grave anemia was it present. Of the five cases of gastric atrophy, two were suspected of being of malignant origin. There was no digestion leucocytosis in three cases, while it was present in two. One of these latter was suspicious, as stated. Digestion leucocytosis was present in one case of ulcus ventriculi rotundum, and also in a case of cancer of the esophagus. This proves that the absence of digestion leucocytosis is not a certain sign of cancer, though it has a certain diagnostic significance. Chasbourne (T. L.)—Beitrag zur Verdauungsleukocytose bei Magenkranken. Berl. klin. Wchnschr., 1898. No. 2.

Diagnosis of Pulmonary Tuberculosis by means of Potassium Iodide.

In suspected pulmonary tuberculosis the locality and extent of the affection were demonstrated by the development of râles caused by administering small doses of potassium iodide. The drug is eliminated through the mucosa of the bronchi, producing an increased flow of mucus, cough and râles. It has been found that the iodide caused in some normal subjects diffuse mucous râles. Wells (E. F.)—Pulmonary tuberculosis. Its early diagnosis and the locating of the local lesion by the use of potassium iodid. J. Am. Med. Ass., 1899, xxx, 216.

Determination of the Alkalinity of the Blood.

Place in the glass capsule of the apparatus of Schlössing 20 gr. of finely rubbed up, neutral reacting $(NH_4)_2SO_4$, dissolve it in 20 cc of water and add a given quantity (10-25 cc) of blood. Place in the acid receptacle of the apparatus 10 cc of 1-10 n. or ¼ n. acid. After the apparatus has stood 5 or 6 days, titrate the acid with 1-10 n. or ¼ n. alkali. The difference corresponds to the alkalin substance of the blood. By this method the blood of hogs gave an alkalescence of 0.252 per cent NaOH; that of rabbits, 0.214 per cent. It might be thought the preformed ammonia of the blood would lead to error; but v. Nencki has shown that its amount is so exceedingly small (1 to 2 mg. in 100 cc of blood) that it may be ignored. Salkowski, (E.) Uber ein neues Verfahren zur Bestimmung der Alkalescenz des Blutes. Centralbl. f. d. med. Wissensch., 1898, xxxvi, 91. 3.

BIOCHEMISTRY IN RELATION TO MEDICINE AND HYGIENE.

UNDER THE CHARGE OF
E. A. DE SCHWEINITZ, Ph. D., M. D.
Director Biochemic Laboratory, B. A. I., Agricultural Department.

The Antitoxic Properties of the Central Nervous System.

In connection with Ehrlich's theory of the direct chemical action of toxin upon antitoxin, the author has made some studies of the antitoxic properties of the central nervous system. Ehrlich holds that the specific atomic grouping of the germ poison possesses a fixed relationship to certain atomic groupings normally present in the body. An active immunity rests upon an increased production of these same substances which, according to Ehrlich, are certain side chains of the cell protoplasm which have been thrown off.

Wassermann and Takaki have endeavored to prove the presence of an antitoxic substance for tetanus in a non-immunized animal. The power of the tetanus poison to attack the central nervous system might indicate that probably the combination of the poison with the corresponding specific atom grouping of the nervous system took place. If such a chemical combination can take place in the animal body there are no good reasons why an analogous process should not take place outside of the animal body. Wassermann and Takaki have shown that the brain and spinal cord neutralize tetanus poison in a test glass. This result naturally leads to the question—may there not be a similar relationship between the diphtheria poison and various organs of the normal body. The author examined various organs of an animal which had served as the source of large quantities of antitoxin for diphtheria, but could not detect the presence of antitoxin in the brain or spinal cord. The author made some experiments upon rabbits and guinea-pigs, which showed that the brain and spinal cord of these animals rubbed into an emulsion and mixed with the diphtheria toxin did not counteract the characteristic diphtheria poison and showed further that there is no similar relationship between the cells of these organs and the diphtheria poison similar to that which apparently exists between the central nervous system and tetanus poison. Dr. Bomstein. Ueber die antitoxischen Eigenischaften des Central-nervensystems. Central-Blatt für Bakt., vol. xxiii, No. 14, April 12, 1898.

The Action of Cobra Poisoning on the Blood.

The authors have made an experimental study upon the effect of cobra poison upon the blood and come to the following conclusion. That the cobra poison delays or inhibits the clotting of the blood in vitro. This inhibitory action is neutralized by anti-venomous serum, and this action of the anti-venomous serum in vitro is specific. The anti-venomous serum itself when added to the blood delays clotting. The neutralization of the toxin by this anti-toxin in vitro it would appear is more chemical than vital. J. W. W. Stephens and W. Myrea. The Action of Cobra Poison on the Blood. A Contribution to the Study of Passive Immunity. Jour. of Pathol. & Bact. Vol. 5, No. 3, Oct., 1898.

The Condition of the Salivary Glands and Pancreas in Chronic Tuberculosis.

The author, following the work of Soltau Fenwick upon the mucous membrane of the stomach of patients who had had chronic tuberculosis, which indicated that the wasting of internal organs was usually found under these conditions found that it is not a mere atrophy but is due to a slow and definite fibrosis which attacks connective tissue first of all and then indirectly produces destruction of the secreting cells of the glands. As he had demonstrated a deficiency in the amount of diastatic ferment of the saliva of phthisical patients

in the late stage of the disease, he examined the secreting tissue of the salivary glands to see if their condition might not account for the deficiency noticed. The examination of a very few cases suggested the probability that fibrosis of the glands was very often present. Vincent D. Harris. The Condition of the Salivary Glands and Pancreas in Chronic Tuberculosis. Journ. of Pathol. & Bact., Vol. 5, No. 3, Oct., 1898.

The Effect of Sewer Air Upon the Toxicity of Diphtheria Bacilli.

The author made some experiments to see if it could be demonstrated that the inhaling of sewer gas by animals and men, that contained in their throats nonvirulent diphtheria bacilli, would result in the production of the disease. He found, however, that the toxicity of slightly virulent diphtheria bacilli was not increased when they were cultivated in broth over which fæcal air was allowed to pass, even though the treatment was kept up for a period of two months. He demonstrated the lack of increase of virulence by making animal inoculations from time to time. Samuel G. Shattock. Experiments to Determine Whether Sewer Air Will Raise the Toxicity of Lowly Virulent Diphtheria Bacilli. In Journ. of Pathol. & Bact., Vol. 5, No. 3, Oct., 1898.

The Bactericidal Strength of the Leucocytes in Different Animals.

The author made a number of investigations in order to determine the bactericidal strength of the leucocytes in different species of animals, and comes to the following conclusions: The bactericidal strength of the leucocytes of different animals as the dog, rabbit and guinea-pig, varies with regard to the more pathogenic bacteria. The living as well as the dead leucocytes of the dog, which possess a higher bactericidal strength than the plasma, retain their strength after heating to 60° C. The vital processes in the animal body support the bactericidal action in the body against the entrance of the leucocytes from another animal. The leucocytes from a strange animal are thus destroyed, but the leucocytes of the animal into the body of which they have gained access, do not lose strength or vitality. When a dog is being immunized against typhus there is no increase of bactericidal substance in the leucocytes. The bactericidal strength of the leucocytes remains the same. Hence the bactericidal substance of the blood on the one hand and the leucocytes on the other are not identical. Däubler, (C.) Ueber die baktericide Kraft der Leucocytenstoffe verschiedener Tierspecies und ihr Verhältnis zu den bactericiden Stoffen des Blutserums. Centralbl. f. Bakt., vol. 25, No. 5, Feb. 14, 1899.

The Question of Immunity Against Bubonic Plague.

The author has made a very careful study of the character of the immunity to bubonic plague which can be produced by the use of anti-bubonic serum obtained from horses that have been carefully treated in a manner similar to that which is used in the production of diphtheria antitoxin. He came to the following conclusions: That the anti-pest serum injected subcutaneously by itself produces only a passive immunity, the length of which is dependent upon the quantity of serum injected. If the serum was used in the quantity of 1-30th to 1-100th of the weight of the animal it conferred a resistance against a fatal inoculation during five days. If the dose was less its action was less prolonged. An animal which has been injected with the serum and possesses this passive immunity acquires a certain degree of active immunity after inoculation with the virulent pest bacillus. The capability of elaborating an active immunity and the permanence of this latter resisting quality, they have found to be in inverse proportion to the quantity of serum injected before the inoculation with the germs. The acquisition of an active immunity on the part of the animal is closely associated with the pathogenic reaction induced by inoculation with the germ. S. K. Beinarowitch. Sur la question de l'immunité contre la peste bubonique. Durée de l' immunité passive. Essais d' immunisation au moyen des injections combinées de sérum anti-pesteux et de microbes pesteux. Arch. d. Sci. Biologiques, Vol. 6, No. 3, 1898.

Therapeutic Notes.

Proposals.

Proposals for potatoes and Maltine for the year 1899.

Sealed bids or estimates for the aforesaid will be received at the office of the Department of Public Charities, Foot of East 26th Street, in the Borough of Manhattan, City of New York, until 12 o'clock M., Monday, February 20, 1899.

For further particulars see City Record.

The advertisement quoted above which recently appeared in the daily papers strikingly illustrates how the value of Maltine is appreciated by the medical profession, and how general its use has become. That proposals for it should be linked with proprosals for something so universally consumed as the potato, is indeed remarkable. It is suggestive, too; the city's poor must be sadly subject to starchy indigestion for Maltine is a specific for that condition by reason of its richness in the starch-converting principle, diastase. International Journal of Surgery.

Affections of the Nose and Throat.

In the variable weather which has been prevailing for some time all over the country, every one is more exposed than ever to catarrhal diseases. Firnol is an efficacious remedy for these troubles, and it was especially devised for physicians' prescriptions in treating affections of the mucous membrane of nose and throat by means of spraying. It is not a secret nostrum, but every ingredient is made known to the doctor. W. C. Downey and Co. of Washington, D. C. will be glad to furnish literature and samples.

Syr. Hypophos. Comp. McArthur.

After an attack of the grip the patient finds himself in a state of extreme weakness and prostration from which condition he is tediously brought to his former good health. Remedies which stimulate his exhausted nerves too vigorously do so at the expense of his general condition. Then comes the relapse. Syr. Hypophos. Comp. McArthur conveys to the tissues the revivifying and vitalizing agent phosphorous in its most oxidizable and assimilable form. Thus the true vitallty of the nerve structure is restored by renewing the nutrition of the tissues themselves.

100 Per Cent. of Successes.

Nothing brought to the attention of the medical profession in recent years has called forth more favorable comment than has the so-called liquid vaccine virus. True, physicians find that it dries more slowly and producers that the first cost is much greater than that of other forms, but these are insignificant when compared with the great advantages it possesses. In glycerinized lymph physicians have a virus which is practically successful in every instance, especially in first vaccinations and which retains its strength at least six months. Again the product is free from harmful bacteria and the character of the vesicle it produces is highly satisfactory both to physicians and to the vaccinated.

Mulford's Glycerinized Vaccine Lympth is guaranteed to succeed in 100 per cent. of primary cases. It produces a normal vesicle in a large proportion of instances.

Vapor Massage.

Patents covering medical and surgical appliances were formerly looked upon with much disfavor by the medical profession. This rather narrow view has given place to a more liberal one, which recognizes the right of the inventor to the same protection as is given in a copyright to the author of a medical book.

A very valuable invention of this class is the subject of a recently issued United States patent. The object of this invention is to supply a ready means for the treatment of respiratory and aural affections with compressed Nebulized Vapor, to which the inventor has applied the name, Vapor Massage.

The apparatus, which is manufactured by the Globe Manufacturing Company of Battle Creek, Michigan, has been thoroughly tested by many prominent specialists. The marked success which has attended its use has already resulted in the appearance of several imitations,

which are infringements of the patent referred to above.

Specific Erythema.

Dr. Ziegler of Allegheny reports the following cases:

Case 1.—M. S., fifty-two years of age, male, was some years afflicted with an obstinate form of erythema, probably of specific origin, which heretofore had resisted the usual constitutional and local treatments. The itching of the eruption was intolerable, the anaemia very pronounced—the whole constitution run down. Six weeks medication with Iodia, supplemented by extract of malt and cod liver oil, brought the case under control. I attribute the good effect of Iodia in this, and in other cases, not so much to its mineral ingredients (potass. iodide and ferri phosphate) as to their combination with the fresh principles of vegetable alteratives. I, for my part, believe that only the extracts of the green or fresh plants are reliable for therapeutic effects, the common fluid extracts of the dried plants having proven mostly inert in my hands.

Case 2. F. W., aet. 38; female; presented glandular enlargements complicated with functional disorders (dysmenorrhœa). The persistent administration of Iodia brought marked improvement and patient is on a fair way to recovery.

Case 3. J. P.; male; aet. 60; blood poisoning with chemicals used for dyeing, manifesting itself in a rupia-like eruption and general malaise. Iodia promptly eliminated the morbid matter.

Chlorosis.

In a very interesting paper Dr. S. Ascher of Hamburg declares that notwithstanding high commendations from various sources, manganese was not generally adopted in the treatment of chlorosis, and in cases when iron failed to act resort was had to purely dietetic measures. The reason for this was that no preparation existed in which iron was combined with manganese in a readily absorbable form. Such a preparation, however, is Gude's Pepto-Mangan, and the results obtained from its use by myself and others are exceedingly promising.

Gude's Pepto-Mangan has been tried by me and a few colleagues in various diseases associated with a deprecieted condition of the blood, altogether in eighty cases, and in the following I will give a few exact data concerning the observation thus far made by us.

In the simple chlorosis of females durthe period of puberty we have employed Gude's Pepto-Mangan in about thirty cases with uniformly good results. The remedy was always well borne, digestive disturbances were never observed, the marked symptoms of headache, vertigo, palpitation of the heart, and loss of appetite were improved within a few weeks. The bodily weight increased by one-half kilogramme (about one pound).

Better Still.

The influenza has been quite prevalent in a number of cities during the past month. In Richmond, there have been many cases, though no deaths distinctly attributed to it. It is affecting mostly those who have had the disease almost annually during the past few years. Although the attacks of this year are relatively mild, they are severe enough to keep business men away from their places of business. Phenacetin, or better still, antikamnia, with salol or quinia, and a little powdered digitalis added, has proved a satisfactory plan of treatment, presupposing, of course, that the bowels are kept open, the secretions of internal organs are sttended to, and that the patient is kept in-doors, especially at night or in bad weather.—The Virginia Medical Semi-Monthly.

Ulcer of the Stomach.

Dr. Satterthwaite of New York writes to the Malt Diastase people as follows:

I have used Maltzyme extensively during the past year and found it an exceptionally good remedy in gastric and intestinal indigestion in delicate subjects.

One of my patients, with ulcer of the stomach, has constantly improved under it and has taken it continuously for over nine months.

TRANSACTIONS OF THE MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA.

EDITING COMMITTEE:

GEO. M. KOBER, M. D., JAS. D. MORGAN, M. D., LLEWELLYN ELIOT, M. D.

MEETING OF DECEMBER 7, 1898. Dr. S. C. Busey, President, in the Chair, addressed the Society in the following words:

GENTLEMEN:—You have heard that the annual address will be delivered next Wednesday night under the auspices of the Academy of Sciences. In consequence, this is the last meeting of the Society for this session, and since you adjourn to-night it is my last opportunity to meet you as a Society, and to say I am not a candiate for re-election. I desire to express my deepest gratitude for the honor paid me for so long, for the universal courtesy shown me, and for the support I have had for the past five years from you, my colleagues.

Dr. McArdle moved that, the reading of the paper of the evening by Dr. George W. Johnston, be waived and that the discussion of Dr. W. W. Johnston's and Dr. D. W. Prentiss's papers be taken up. Motion seconded and carried.

(Continued from March number.)

DISCUSSION.

DR. S. S. ADAMS said, the question as to the differential diagnosis between the conditions mapped out by Dr. Johnston opens one of the most interesting fields for the general practitioner. The differential diagnosis between malarial fevers and types of diseases which simulate malarial fevers would seem very easy at first sight, but since very many pathological conditions are accompanied by fevers, running more or less of a regular intermittent type, the differential diagnosis is rendered very difficult. As Dr. Johnston has said, by the aid of blood tests we are able to differentiate the majority of diseases of malarial types from those that simulate them. For methods of investigation these blood analyses, either from previous medical treatment or indifferent method of examination are not always to be depended upon, hence confusion may arise, but even if we determine the presence of the malarial parasite in the blood, the question arises is the disease malarial pure and simple, or do we have to deal with mixed infection. The presence of the parasite, accompanied by an accumulation of pus in the structure of the liver, an ordinary hepatic abscess, a case of which is illustrated by the essayist, excludes for example pyæmia or septicæmia pure and simple, but its absence does not positively nullify its existance, because we find in some cases of malarial diseases all blood analyses fail to discover the malarial parasites on account of previous exhibition of quinine, and thus the diagnosis is obscured. Often there is pus in cases of multiple abscess of the liver, and the surgeon suspects pus, but it is not discovered by incision until at the necropsy. We must not depend upon the regularity of fever and then fail by clinical means to discover the presence of pus.

The case of endocarditis referred to as having been treated by me, was most interesting and obscure. The man had six chills in twenty-four hours. After death I expected to find an area of pus located in the liver, but there was no pus at all, but the condition of the heart was unmistakably infectious endocarditis. Cultures were made from the specimen, and proved to be virulent. He had a typical chill, with sweat and fever, and six in one day. Differential diagnosis between tuberculosis and malaria opens a field between the regular remittent and malarial fevers. In pulmonary tuberculosis, a differential diagnosis can be made from physical signs, but in many cases the lung structures are not involved until late. I once saw a case where the fever was high, running a typical intermittent course, perhaps under the use of quinine, with no evidence of pulmonary tuberculosis and no physical signs at the time. Later the lungs were involved. The original seat was in the spleen, as seen when examined later.

The intermittent character of syphilitic fever is not usual. About a year ago I was sent for to see a case of fever and chill. The man had come from Chicago. Arrived here on a Thursday. Had a chill and another the next day. He was taking a mixture containing quinine, which another physician had prescribed for him, and he asked to be allowed to continue it. I permitted it until Monday, when I was sent for and found him a raving maniac. I had made up my mind it was not intermittent fever, and gave iodide of potash in large doses, 20 grains at first three times daily, then 3 drachms in 24 hours. The man was cured in two weeks. He had the chill Friday, the temperature was normal in the afternoon, had on Saturday another, and on Sunday at noon still another, all the while taking the quinine. The iodide was the remedy that effected the cure where the quinine failed utterly.

DR. W. B. FRENCH: I would like to say a few words as to the aid furnished us in this line by the study of the blood. I do not claim that it is practicable and convenient to carefully study the blood in all cases of doubt in private work. The processes are often time-consuming and require special facilities, but in others, results may be promptly and easily obtained.

Micro-organisms can be demonstrated in cultures from the blood in ulcerative endocarditis, and are very conclusive when found, but a negative result in the examination should not be accepted as definite. The blood in most cases for culture purposes should be collected from one of the veins of the arm, about the anterior surface of the elbow, under strictly aseptic conditions, otherwise the results would be entirely unreliable. It should be allowed to flow, from the stérile pipette or syringe, in which it has been drawn, over the surface of a decided slant of coagulated blood serum, the excess collecting at the bottom of the slant, then placed in an incubator and the result studied in the usual way. The staphylococcus of Rosenbach would be the organism to expect, though the streptococcus pyogenes would very likely also be present. I do not mean to say that these organisms are pathognomic of ulcerative endocarditis for they are present in many other septic conditions, but their presence taken in connection with the symptoms of endocarditis, would certainly be of the greatest value in diagnosis. Perhaps there is no one disease in which the difficulties of diagnosis are so multiplied as in this. A careful study of the blood may help in differentiating between it and typhoid, septic states or conditions of various kinds, if accompanied by visible or known injuries which could give rise to pyogenic infection; malarial infection—though an element of confusion may be introduced in diagnosis by the actual presence of the malarial organism, for there is no reason why the two conditions should not co-exist. I have not met the combination, but if some of the others present have would like to know if the blood showed malaria and the post-mortem ulcerative endocarditis?

In the septic infection of wounds much that I have said of the blood in endocarditis applies with equal truth. Staphylococci and other pyogenic organisms may

be found. The same is true of osteomyelitis at times. In pulmonary tuberculosis a study of the blood gives us most valuable information. In its early stages it is sometimes thought to be malarial or typhoid. The distinction can be made by one or more examinations of the blood, excluding malaria, but it must be remembered these two diseases may coexist. This fact however need not detract from the value of the blood examination, for in several hundred cases I have only met it twice. Thayer and Hewetson in their 600 and more cases did not meet the combined infections once.

I am disposed to believe that the degree of leucocytosis, the blood count and amount of hæmoglobin considered by themselves have not been sufficiently worked out to be available in every day diagnosis. There are striking variations in the leucocytosis of phthisis, due to the necessity of increased resistance following the absorption of pyogenic organisms, but with the fever due to the phthisical process alone there are no special changes. The general count of red cells in pulmonary tuberculosis is about normal, and the same may be said of the hæmoglobin. It may also be the case in advanced stages of the disease. In a certain smaller per cent, however, the hæmoglobin is reduced, red cells about normal. In syphilis a gradual diminution of hæmoglobin occurs, no special changes in red cells appearing before secondary symptoms appear. Characteristic early changes in the blood are wanting, and a study of it then would not be of much practical help.

In leukæmia a differential diagnosis is only possible after examining the blood. Presence of immense numbers of myelocytes is characteristic, 37 to 60 per cent. Myelocytes occur in some other diseases but not in such numbers as in leukæmia. In pneumonia, the diplococcus lanceolatus has been found in the blood, but usually shortly before death and means a desperate prognosis. Most of the cases die. Diagnosis would very likely have been made long before the discovery of this organism. A marked leucocytosis, in the absence of physical signs would point to pneumonia and help to differentiate between it and typhoid, provided suppuration could be excluded. In typhoid fever the bacteriological examination of the blood yields no positive information, though it is said that the bacillus of this disease is occasionally found, but the blood in other ways is a source of very valuable information and will help to determine a given case when no other means will. I refer to Widal's reaction, perhaps not always absolutely reliable, but generally more so than ordinary clinical study; to the absence of a leucocytosis and absence of the malarial organism.

Little need be said of malaria. Positive results furnished by a blood slide cannot be overestimated nor disputed. All are familiar with the tertian and aestivo-autumnal forms which have been so well described of late years.

Dr. Borden: "I have seen a number of cases of combined infection of typhoid and malarial at Key West and here at Washington. Had five cases at Key West where Widal's reaction and the malarial parasite were present, and three cases here of soldiers who had been to Cuba. I do not think the presence of the one alters the action of the other. The clinical history of the cases and the conditions referred to were so certain there could be no question. Though a little outside of the discussion the differentiation between malarial fever and septicaemia is very interesting to me. Have had a considerable number of cases of soldiers at Key West, recently from Cuba, and though they had not had fever for several weeks there would be a sharp rise of temperature shortly after surgical operations, so as to lead one to suspect septicaemia."

Dr. Kober: "I would like to ask Dr. French how many cases of mixed infection of typhoid fever and tuberculosis he has observed?"

Dr. French: "I have not had any cases."

Dr. Acker: "I have been surprised during the past summer in finding a number of cases of mixed malarial and typhoid fever. Nearly every case at Children's Hospital was such. All tests proved it to be so.

One child, about 15 months old, died. It could not have had typhoid previous to entering the hospital. It reacted to Widal's test and had the parasite. Post mortem showed the absence of typhoid. I have a case now where the child was sick for several days with cystitis. Fever first week stayed down 12 hours, then went up for 12 hours for several days. Stayed up for 3 days. Examined the blood for typhoid, and reacted for Widal's test. Fever went down and stayed for five days. Assumed the tertian type of fever again. Has some symptoms of typhoid. At present seems well."

Dr. W. W. Johnston : "A remark of Dr. Borden's prompts me to say that, if called to see a patient with recurring fever at intervals the first thing to determine is, whether the interval is regular or irregular. The first included hepatic fever, ulcerative endocarditis, rheumatism, etc. If the fever is regularly intermittent, it is probably one of these, if not it is sepsis or purulent pyelitis, etc. There is no difficulty in separating sepsis from malarial fever, for sepsis is always irregular and cannot be confounded with malarial fever. If fevers can be classed in one of the two categories, there will be little trouble in diagnosis. Pyelitis is sometimes regular but most likely irregular. One cannot place too much reliance upon the blood examinations in these cases as shown by Dr. Mauss' case. The woman was dying with septic fever and not of malarial fever. She died of pyelitis. The presence of the bacillus of diphtheria does not always indicate diphtheria, and Widal's test does not show positively that the patient has typhoid fever. We must take all the clinical facts to reach a conclusion from."

Dr. Prentiss : "In endocarditis we can recognize the disease from physical signs and so in other diseases, such as gall-stones, catarrhal jaundice, and fever of suppuration, etc. They all produce something of a hepatic fever, but not necessarily of an intermittent character. In any intermittent fever we should first apply the therapeutic test of quinine or arsenic or Warburg's tincture. Malarial fever is not cured in many cases by arsenic, but the tincture has cured many cases where other remedies have failed.

My case of syphilitic fever was very interesting to me from the difficulty of diagnosis. A diagnosis had been made of malarial fever : after two weeks of fever I used specific treatment and the man got better immediately. Other forms of syphilitic fever are due to local syphilitic conditions. Dr. Johnston's reference to Dr. Janeway's paper, in which he states he cured four or five cases of pain over the liver is very interesting. He suspected syphilitic infection only in some cases, in others he did not know about it, but gave specific treatment and all recovered. If we study chronic cases, and cannot arrive at a satisfactory diagnosis it is well to apply the therapeutic test and give the patients specific treatment, such as iodide of potash, etc."

Dr. Geo. W. Johnston's Essay "The Medical Society ; its relation to its members and to the public" was postponed until some future date.

THE HISTORY AND PROGRESS OF SANITATION IN THE CITY OF WASHINGTON, AND THE EFFORTS OF THE MEDICAL PROFESSION IN RELATION THERETO.

Annual Address of the President,
Samuel C. Busey, M. D.

Delivered Before the Washington Academy of Sciences, Dec. 14, 1898.

Mr. President, Ladies and Gentlemen : When Washington, March 29, 1791, made a tour of inspection to mark the metes and bounds of the site selected for the location of the Federal City the territory comprised, in whole or in part, the farm lands of (see Plate I.) nineteen proprietors. The area of 6100 acres was irregularly cut across by numerous farm-roads for the convenience of those residing within its limits. There was but one

roadway* running through the entire area from Georgetown to the Eastern Branch, but neither its course, beginning, nor terminus is stated.

With a single exception the farm-dwellings and out-buildings were constructed of wood. Many of the dwellings were capacious buildings, and known as mansion-houses, denoting the home, wealth, and social standing of the proprietor. Near by each one of the stately mansions was located the family graveyard. The mansion-house of Notley Young was built of brick, and the cottage of David Burnes was "a long, one-story frame." Many of the out-buildings, barns, tenements, and slave-houses were built of logs.

There were also two village settlements. One, named Carrollsburgh, because it occupied a part of "Duddington Manor" and "Duddington Pasture," was situated on the Eastern Branch along and east of St. James Creek. It comprised 160 acres, which had been subdivided in 1770 into 268 building-lots and sold to purchasers selected "by ballot or lottery." It was laid out in rectangular lots and with streets running north and east from the water-fronts, so that every street terminated at the shore-line of either the Eastern Branch or St. James Creek.

Hamburgh, first known as Funkstown, was situated on the Potomac River between Twenty-first and Twenty-fifth Streets, West. It appears to have been a part of a tract of land purchased in 1765 by Jacob Funk, who, in 1770, subdivided it into 287 lots which he sold as "lots in Hamburgh." It was laid out on a plan similar to that of Carrollsburgh, but only the streets running north had water-fronts. Both of these settlements were obliterated by the commissioners, who effected an exchange with the lot-owners by transferring to them lots of equal value in other parts of the city.

The city site was bounded on three sides by streams of fresh, flowing water. The eastern border was swept along a bold shore by the Anacostia, varying in depth from four and a half to six and one-half fathoms of water, offering an opportunity for a safe harbor for a naval and mercantile marine, and sufficiently capacious for an extensive commerce.* The southern boundary was washed by the rapid current of the Potomac from its deep water at the mouth of Rock Creek to its junction with the Anacostia. Rock Creek, on the west, then as now, flowed through a deep ravine around the the horseshoe bend to its outlet into the Potomac. It was then a picturesque stream of unpolluted water, but is now an open sluice-way for the sewage of one, and, until recently, of both of the neighboring cities, not less offensive to observation than conducive to the production of mephitic emanations.

In addition to the boundary water-courses there were several creeks into which numerous spring streams emptied along their way through the territory. The three head-water branches of the Tiber, with sources at elevations varying from 115 feet and 7 inches to 236 feet and 7 inches above the level of the tide, one of which found its beginning in the grounds of the Soldiers' Home, penetrated the northern boundary-line at different points between Vermont and New York Avenues. At or near the latter point they united in a common stream, which flowed along a valley in a southwest direction, reaching the elevation of tide-

*Referred to by Mr. Jefferson in his letter of appointment of L'Enfant. Jefferson's Works vol. iii, p. 221.

*Pictures of the City of Washington in the Past, Chap. iii.

water in a depression between Capitol Hill and Judiciary Square, crossing Pennsylvania Avenue at Second Street, West, to B Street, South, and thence by an abrupt change in its course to its mouth at the foot of Seventeenth Street, West. Its water-shed covered hundreds of acres, extending from Fourteenth Street, West, far into the eastern section. Its banks were "originally covered with trees and underwood of different varieties, and formed a romantic stream, which was overpread in spring and autumn with wild ducks, and penetrated as far up as Pennsylvania Avenue, with multitudes of shad, herring, pike, perch," and other food fishes. One of its largest tributaries, now concealed by improvements, crossed Pennsylvania Avenue between Ninth and Tenth Streets, West, had its source in the springs in Franklin Square.

St. James Creek, a bayou or effluent branch of the Tiber, was a considerable stream, extending from Third Street, West, in a southeast direction to its outlet into the river east of the Arsenal grounds. Along its course it received the waters of the many springs located in the contiguous territory. That part of the creek now known as James Creek Canal is an open sewer filled with a mass of filth, moving in a sluggish current, subject to the action of the tides and emitting gases offensive to the comfort and a menace to the health of the residents of that section of the city.

A tidal stream, somewhat smaller than the Tiber, which floated flat-bottom boats, but now entirely obliterated, extended, during high tide, from Twenty-first Street, West, along the lowland south of the President's house.

In the western part of the city the largest stream was that known as Slash Run, now converted into a sewer. From Boundary and V Streets it ran a tortuous course through swampy lands and along ravines, receiving the waters of springs and drainage courses to its mouth into Rock Creek below the P Street bridge. It was the affluent and drainage stream of the extreme northwest of the original site.

According to the statement of Superintendent McComb, the main drainage areas of the city were "originally Tiber Creek, 2600 acres; St. James Creek, 600 acres; and Slash Run, 650 acres. In addition, 200 acres drained directly to Rock Creek, 1300 acres drained directly to the Anacostia River, and 700 acres drained directly to the Potomac River."*

There were within the limits of the city so many "good springs of excellent water abundantly supplied during the driest season of the year," that L'Enfant designed the collection of the waters "into fountains intended, with a constant spout of water," to be located in different sections of the city, one of which was to be erected upon the reservation on Pennsylvania Avenue, the use of which has been granted by Congress to a company for a market-place. It is hoped that Congress will, in the near future, obliterate this unsightly mutilation, and restore the reservation to its orginal purpose.†

The contour of the basin in which the city is located was undulating, with intervening valleys, ravines, morasses, and lowlands subject to overflow. The highest elevations reached 93 feet above the tide at Capitol Hill, and 127 feet above the tide in the northwestern part of the

*Evening Star, Oct., 1898.

†For a fuller and more detailed description of the streams and springs, see volume entitled, Pictures of the City of Washington in the Past, pp. 147-160.

city.‡ Within it is a well-defined deposit, known as the Columbia formation, which "consists of loam or brick-clay above, and sand, gravel, or both combined below," * * "more or less distinctly stratified, and at its base it often becomes a simple bed of bowlders and gravel." * * "By reason of its structure and position, underground water circulates slowly through the upper portion and freely through the lower portion, and in both divisions the movement of underground water takes place more fully horizontally than vertically.* In his preliminary report to the President, bearing date March 26, 1791, L'Enfant describes the "high flat" extending west from the bold shore of the Eastern Branch to Jenkins Hill, which he suggested would be a suitable location for the "Congress House of a great Empire." L'Enfant believed the first settlement of a great city would necessarily take place upon this "high flat," because of its majestic aspect and picturesque prospect "over all the country around for twenty miles off," and its proximity to and direct connection with the deep waters of the Anacostia. He describes also the lower plateau in front of Jenkins Hill, extending back from the shore of the Potomac River to a ridge, which, perhaps, was known later as the F Street ridge. This ridge extended eastward from Twentieth Street, West, along F Street to Eleventh Street, and divided the territory along its course into two drainage areas. The current of the fall water on the north side was through G Street to Eleventh, and thence into and with the spring stream from Franklin Square, through the low-lands to the Tiber, sometimes adding to it a volume of water sufficient to convert it into a swift-flowing, impassable stream. That on the south side of the ridge followed the course of Pennsylvania Avenue from Fifteenth Street to its confluence with the stream crossing the Avenue between Ninth and Tenth Streets. The undulating character of the site and the difference in elevations was a marked feature of its contour. All waters falling upon the surface had their drainage either into the Eastern Branch, Tiber, and St. James Creek, or into Rock Creek or into the Potomac River.

So much of the territory was woodland that the original proprietors reserved the ownership of the timber, except such as might be reserved by the President, which was to be paid for "at a just and reasonable valuation".* Some of the forests covered large areas of land. Many smaller tracts and spaces were occupied by clusters, groves, and clumps of forest trees. Other larger and smaller areas were covered with shrub-oak, alder, thorn bushes, and grape-vines. Mr. Wells, who assisted in the original survey and planting of the city, says, "that at that time more than half of the territory included within its limits was covered with woods and swamps." In his autobiography, Colonel John Trumbull, who was a visitor to the city as early as May, 1791, writes, "where the Capitol now stands was then a thick wood." In his Early Recollections of the City of Washington, Christian Hines refers to "acres of elegant forest trees," which occupied a part of the reservation now known as the Mall, which were standing as late as 1796. Thomas Twining, in 1796, on his way from the "Fountain Tavern," in Georgetown, to the residence of Mr. Law, at

‡Ex. Doc. 445, 51st Congress, 1st Session. Report of Commission of Sanitary Engineers, p. 11.

*Prof. W. J. McGee. Report of Health Officer of the District of Columbia for 1885, p. 20.

* Agreement of original proprietors of March 30, 1791. Pictures of the City of Washington in the Past, p. 29.

Greenleaf's Point, forded Rock Creek at P Street, North, passed through an extensive tract of level country and then entered a large woods, through which he rode "for half a mile along a spacious way marked by the cutting down of the trees in a straight line," and then came out upon a large spot, cleared of wood, in the centre of which was "the foundation of the Capitol." From the walls he saw on every side a dense woods pierced with avenues. In 1799 the Government obtained the timber to construct the wharves at the Navy Yard from the "white oak slashes in the northern part of the city, on the east side of Seventh Street near the head of the Tiber." Isaac Weld had to travel "through deep woods for one or two miles to see his next-door neighbor." Mrs. John Adams complained that she was surrounded with forests, but could not get wood enough to keep the fires going in the Executive Mansion, "because people could not be found to cut and cart it." In his oration delivered at the laying of the corner-stone of the extension of the Capitol, July 4, 1851, Daniel Webster, in his reference to Washington, who laid the corner-stone of the Capitol, September 18, 1793, said, "He heads a short procession over these then naked fields; he crosses yonder stream on a fallen tree; he ascends to the top of this eminence, whose original oaks of the forest stood as thick around him as if the spot had been devoted to Druidical worship, and here he performs the appointed duty of the day." Those giant oaks have all disappeared, and not a stump is left to mark the locality of that dense forest which had shaded the hill of "Rome" in the dismal gloom of undisturbed solitude through centuries gone before. Nor is there left one tree to landmark the acres and lesser groups of native and primeval forests which, a century and a half before, Henry Fleet saw "swarming with deer, buffalo, bears, and turkeys," and other small game in great abundance.

The swampy lowlands spread out in many acres south of the F Street ridge to the river shore, along the valleys of St. James Creek and the Tiber, including a greater part of the White Lot and the Mall, which, for the most part, were covered with shrubby growths and bramble and waukapin bushes. But the largest continuous area of morass and swamp was the section, known as the Slashes, lying along the northern boundary-line from the Tiber to Rock Creek, dipping, in many places, far into the interior of the basin. At a later period this morass was interspersed with patches of solid and reclaimed land, which some thrifty truckmen had utilized for the growing of marketable vegetables, but as late as 1850 it was, for the most part, the pasture and roaming fields for herds of milch cows and swine, with consequent pollution of the soil.

Around this great geological basin, with its plateaus of moorlands and lowlands; its farm-lands and morasses; hills, valleys, and ravines; springs, streams, and drainage courses, there was a range of wooded heights, (see Plate IV.), extending from the Potomac, on the east, to Little River, on the west, with elevations varying from 200 to 420 feet above the level of the tide, and broken only by the creeks that penetrated its territory and the rivers that washed its shore-lines to unite at its base in one great river that flowed through the gap to the bay. Along its course of irregular elevations the many fields of view seem to rival each other in the grandeur, diversity, and expanse of prospect, that "marked the breadth of the picture, and the strong colors in the grand and environing wall of forest heights, which rolled back against the sky, as if to enclose a noble area of land-

scape, fit for the supreme deliberations of a Continental nation."

It must, then, be clear to every sanitarian that the contour and physicial conditions of the floor of the basin were such as to unfit the site for the location of the Capital of a great empire, and nothing less than the genius of L'Enfant, evolved under the direction and supervision of Washington, could have devised a plan which could overcome the natural and topographical obstacles and defects and be developed into a city as grand and beautiful in all of its appointments as now stands upon the site.

With a water-front along three-fourths of its boundary lines, the site offered unusual facilities for the establishment of initial systems of drainage and sewerage which, even at that early period, might have lessened the prevalence of malarial diseases, so rife among the early settlers of the embryo city. But it does not appear that either the engineers or commissioners considered the problems of sanitation of the new city. On the contrary, they seemed to have been exclusively occupied in devising a plan of the city that would enlarge, expand, and diversify the prospects, and develop the business and commercial interests, even so, in utter disregard of the contour and physical conditions of the territory. In his letter from Charleston to the commissioners, April 17, 1791, Washington directs that the level of the water-courses be taken and the measure of the heights be made before "the city could be laid out and the spot for the public buildings be fixed on." Notwithstanding this direct and far-reaching order, little attention was paid in the plan of the city to the courses of natural drainage, which ought to have received consideration. The streets, and avenues, and subdivisions into squares had no reference to the natural surface and drainage courses, but were adapted to the sites of the public buildings and to artificial objects. Hence the deplorable obstacles to the progress of systems of drainage and sewerage, which have not yet been completed. It is true that L'Enfant designed the construction of a grand canal of fresh, flowing water along the courses of the Tiber and St. James Creek, through the improved fields, and along the decorated park intended to connect the two "Grand Edifices," which came to naught, through the greed of some favored citizens, by an Act of Congress granting a charter for the construction of a slack-waterway for business purposes. L'Enfant also designed the plan of collecting the waters of the springs into "spouting fountains" and the conveyance of the waters of the Tiber to the "high flat" to supply drinking-water. Whether so intended or not, these abandoned parts of the plan of the city, approved by Washington, were projects in the line of sanitation.

The reclamation of Pennsylvania Avenue was the first effort at street improvement, and, perhaps, notes the first attempt at sanitation. When first laid out, that part between Fifteenth Street, West, and the foot of Capitol Hill was a boggy morass covered with bramble bushes and subject to tidal inundations and storm-water overflow. It was the habitation of game, venomous reptiles, and pestiferous insects, and forbidden to man and beast. Soon after the beginning of the foundation of the Capitol, in 1793, its improvement was set on foot by carting earth, gravel, and chips of stone first to make footways, and then to fill up and level the centre until a rough roadway was incompletely prepared. This method of improvement was continued until, by the Act of Congress of April 24, 1800*, ten

*Entitled an "Act to make further provision for the removal and accommodation of the Government of the United States."

thousand dollars, "to be reimbursed by the sale of lots," was appropriated "for footways to be made for the convenience of Congress."

To Jefferson is due the credit of prophetic conception of the future importance and grandeur of the only direct transitway between the Executive Mansion and the Capitol. He foresaw the eventual prospective of a thoroughfare through which the business between the legislative and executive departments must be transacted, and lent his efforts with zeal and directness to improve and develop the way in comparable beauty and splendor to some of the most notable avenues in other capitals. Through his influence Congress, in 1803, made a second appropriation, of which $13,466.69 were expended in improving the avenue according to his plans, which consisted, in part, of its division in course, by planting four rows of Lombardy poplars (see Plate II.), one row along each side and two through the centre, equidistant from the curb-line. During the three succeeding decades the corporate authorities provided as best they could, but in a very incomplete and meagre manner, for repairs, improvements, and extensions.

In 1830 a Committee of the House of Representatives was appointed to inquire "into the expediency of making provision by act of Congress, or otherwise, for the improvement and repair of the street in Washington City called the Pennsylvania Avenue, from the President's House to the Capitol, on the macadam plan, or other permanent manner." In its report the committee pronounced the street "neither safe nor convenient," and declared it to be a public highway the improvement of which was necessary "to provide a safe and convenient road of communication, * * * not merely for the convenience of the citizens of the District of Columbia, but for Members of Congress, the various and numerous officers of the General Government residing in this District, and the citizens of the States who may have business to transact with Congress and these officers." The improvement, in accordance with the plan of the committee, to pave the space between the middle rows of trees with "sizable round stone," or macadamize with "pounded stone" and cover the other parts "six inches deep with clean, coarse gravel," completed the reclamation of a large area of low and swampy land, enhanced the value of property, encouraged the erection of buildings along its course, and supplied sidewalks for the pleasure and convenience of Members of Congress, but only to a limited extent, if at all, improved the surface drainage. During the succeeding decades (1830 to 1850) the avenue was several times improved by regrading, paving, and repaving with cobble-stones, by relaying of brick sidewalks and curbing, and, since, by paving in succession with wood-blocks, concrete and asphalt.

Pennsylvania Avenue has outlived its mud and poplars to be all and more than Jefferson dreamed it would be.* It has, through the years of a century and more, emerged from its prenatal state of slimy maceration and swaddling life of bramble and brier bushes, passed through the inchoate conditions of morass and mud, of stone chips and white mortar, and of macadam and cobble-stones. All these are historic relics of its slow, but gradual transformation from an impenetrable and water-logged morass to an avenue, in fact as well as in name and dimensions.

The mutilation of the scheme of the "Grand Canal," by authority of the Acts of Congress of May 1, 1802, and

*Pictures of the City of Washington in the Past, pp. 226-291.

February 9, 1809, and other subsequent supplemental and amendatory Acts, granting to the "Washington Canal Company" a charter to construct for commercial purposes a canal along the courses of the Tiber and St. James Creek through the territory from the foot of Seventeenth Street, West, to the Anacostia River at the foot of Second Street, East, was the first enterprise materially affecting the drainage of the city. Through this water-way the storm and subsoil waters of a large area found outlet to the river. By authority of an Act approved January 31, 1831, the city purchased this canal and continued its use for commercial purposes. Prior to 1871 all the sewers constructed by the city emptied into it, and, as it flowed through a greater part of its course along a natural valley line, it became the trunk-drain for the central section of the city.* With lessened use as a business enterprise, and continuously increasing accumulation of filth, it became such a nuisance, offensive alike to sight and smell, and such a menace to health, that its obliteration by filling, begun in 1871, was completed in 1880. By its construction the original design of a Grand Canal of flowing water through the heart of the city was mutilated, then abandoned by its conversion into a common receptacle of the sewage, subsoil, storm water, and filth of the most densely populated portion of the city, which made its destruction a necessity, as well for the comfort as for the health of the residents of the contiguous section of the city. The construction of the B Street and Tiber sewers, emptying respectively into the Potomac and Anacostia Rivers, which filled its place as drain and filth-carriers, was, however, a substantial advance in the sanitation of the city.

*Report and operations of the Engineer Department of the District of Columbia for the year ending June 30, 1897, p. 103.

During the long period between the reclamation of Pennsylvania Avenue and its improvement according to the plan of the Committee of the House of Representatives, the progress of street improvement was either stationary or so slow and unsatisfactory that citizens grew weary in futile efforts to obtain passable roadways for business purposes through the central and most populous section of the city. A few streets were year by year rudely prepared by filling the low places along their courses, setting curbstones, laying sidewalks, paving gutters along the curb-lines, and covering the carriage-ways with a few inches of gravel. In very many instances such improvements so obstructed the natural drainage-courses that large areas of private property were submerged. These collections of stagnant water depreciated property values and were so obstructive to building operations that considerations of injury and expense to lot-owners finally became so complicated and difficult of solution that the surveyors sought the opinion of Attorney-General Rush, who in his reply of November 25, 1817, decided that the rights of drainage through means of natural water-courses which originally flowed over "building-lots were not affected by the laying out of the city," and "that the cost of drainage must be borne by the proprietors of the lower lots," * * "provided that the water has been thrown upon it through natural means." There was, therefore, no escape for the owners of lots submerged by obstruction of the ordinary course of fall-water, except by filling the lots to the grade of the streets, thereby converting the street-gutters into water- and sewage-ways, through which flowed the street-washings and garbage refuse, and fluids not consumed by the flocks of geese and herds of swine that roamed at

pleasure through the streets of the city.

The introduction of Potomac water in 1859 marks an important epoch in the history of sanitation of the city. Previous to that time the drinking-water supply was obtained from springs, pumps, wells, and, in a few instances, from private reservoirs of rain-water collected from roofs. There is no record of any measurements of the level of the ground-water in any part of the city, but, from observation of the depth of wells and other sources, it can be approximately stated to vary in different localities from a few feet below the surface to greater depths in higher localities. The larger and smaller areas of porous soil must, therefore, have been constantly subject to capillary filtration, even to saturation, according to seasons, the amount of precipitation and the volume of water in the principal drainage channels. The geological character of the basin naturally favors soil pollution from the seepage of the many thousands of cesspools, vaults, surface-box privies, and finally leaky and defective sewer-drains and house-drains. Soil pollution means, of course, water pollution of all the shallow and many deep wells which have recently been drilled in the hope of securing a purer water-supply.

The abatement of such evils, so baneful and detrimental to health, cannot be accomplished without systems of adequate water-supply and sewage disposal, which have not yet been completed. In recent years, commendable progress has been made, and Congress, at the last session, seemed to have awakened to the knowledge of the importance of the subject.

Sewer construction was begun in 1810 by an appropriation made by the city government of $120 to erect "an arch on the south side of Pennsylvania Avenue between Ninth and Tenth Streets." During the period extending from that date to 1871, numerous sums were appropriated, mostly after the introduction of Potomac water, by the city and General Governments, which were expended in the construction of sewers, with a few isolated exceptions, in that part of the city lying south of M Street, North, and between Third and Seventeenth Streets, West. These sewers were designed to carry storm-water, subsoil-water, and liquid sewage to the canal. The Franklin Square stream was the main trunk-line, which in the beginning was only arched at street-crossings, but is now completely concealed by extension of the arching and erection of buildings over it along its entire course. By the Act of Congress approved February 21, 1871, entitled "an Act to provide a Government for the District of Columbia," known as the "Territorial Government," a Board of Public Works* was created, which established the beginning of important and comprehensive sanitary improvements, consisting in the adoption of a general system of opening, regulating, and grading of the streets, and of their improvement by pavements with stone, wood-block, and concrete; widening, laying and relaying of sidewalks; arching of running streams; decoration of parks and spaces; reclamation of lowlands; drainage of swamps; compulsory filling and draining of submerged lots, squares, and large areas; extension of the water-supply, and construction of a system of sewerage, which was "planned and built only where the rapid increase of population, and consequently of its waste water, made underground removal necessary at the time, without consideration of ultimate requirements." In 1874, after about eighty miles of sewers, mostly of pipes, had been constructed, the Board of Public Works was abolished

* Ex. Doc. No. 445, 51st Congress, 1st Session.

and the government of the District was placed under the management of a board of three non-resident commissioners, which continued the general and extensive plan of improvements originated and prosecuted with energy at great cost by the Board of Public Works.

Notwithstanding the great progress of the sanitation of the city, especially in the abatement of many nuisances and the transference of others to points remote from the populous parts of the city, during the regime of the Board of Public Works and its immediate successor, many grave mistakes were made, the correction of which has required, and will continue to require, large additional expenditures "to bring the sewerage system up to the standard of modern sanitary engineering." Among the many defects were faulty construction, insufficient capacity to carry the storm-waters, "absence of slope, and therefore of scouring velocities," imperfect soil-drainage and ventilation, construction of pipe-sewers with loose and imperfect connections, permitting their obstruction by roots of trees; the building of James Creek Canal, which soon became, as it is to-day, an open channel of festering accumulation of filth, and the failure "to discharge the sewage into the channel of the river, or arranging to do so later." The discharge of sewage into "the canal at such elevations as to preclude its being carried into the river by sewers having a free discharge at high-tide," "created such a dangerous nuisance by the continual accumulation" of sewage deposit as to necessitate the filling of the canal and the construction of the Tiber Creek and B Street sewers. The construction of these large sewers with insufficient grade admits the entrance of tide-water, causing retardation of the flow of the sewage to a distance of two miles from the Eastern Branch in the Tiber Creek, and one and a half miles from the river in the B Street sewer, and has resulted in accumulation of deposits reaching several inches in depth and thousands of feet in length. The sewerage from the B Street outlet found lodgment upon the Potomac flats, to the detriment of the health of the general public, and caused such continual increase of disease that the community at large remonstrated against the delay in efforts to reclaim these flats.

Under the Act approved June 11, 1878, entitled "an Act providing a permanent form of government for the District of Columbia," the government of the city was placed under the management of three commissioners, one of whom must be an engineer officer of the United States Army, to have charge of the engineering work. With the creation of this form of government began the work of the highest scientific skill upon the broadest lines of modern sanitary engineering, which, with the passage of the Bond bill of 1894, would have advanced the progress of sanitation in this city beyond that of any city in this country. Faulty work with unfit material and obstructed sewers have been replaced with better material in more durable manner. Out-falls have been improved. Storm-water, intercepting-sewers and trunk-line sewers have been constructed. Many defects have been corrected and the nuisances created by such mistakes have been finally abated.

Under the provision of the Act of Congress of March 2, 1889, entitled "an Act making appropriations to provide for the expenses of the Government of the District of Columbia for the fiscal year ending June 30, 1890," the President was authorized to appoint three sanitary engineers* charged with the

*Rudolph Henry, New York, Samuel M Gray, Rhode Island, and Frederick P. Sterns Massachusetts.

duty of examining the system of sewerage of the District and to report with such suggestions and recommendations as might to them seem necessary or desirable for the modification and extension of the same Their report, submitted July 17, 1890, was adopted by Congress in 1892. This report comprehends the problems of a system of sewerage, drainage, and sewage disposal in an unobjectionable manner, the prevention of inconveniences and damage from heavy rain-storms and freshets in the Potomac River, which have caused frequent inundations of the low areas in the central part of the city. Recently the improvements and extensions have been made in conformity to the recommendations set forth in that report. With the completion of this system it is believed that much will be accomplished for the sanitation of the National Capital. *Pari passu* with the progress of this work there must be extension and purification of the water supply, with destruction of surface springs and wells, and compulsory connection of inhabited and habitable houses with the systems of water-supply and sewage-disposal. Then, and then only, can we hope to limit the prevalence of preventable diseases and lessen mortality.

When the city was laid out there were no river-flats. At an early date, how early does not appear, there were discovered large areas of shoal water (see Plate III.) between the channels of the Potomac River, one between the middle and city channels, extending from a point opposite Twenty-fifth Street to Tenth Street, West, and a large area between the middle and Virginia channels, extending from about the same point opposite the foot of Twenty-fifth Street, West, to Greenleaf's Point, which increased by continuous deposition and finally became one large area of exposed surface covered with a luxuriant growth of succulent and noxious weeds to rot and stink in the nostrils of a suffering community. Popular judgment ascribes the formation of these flats to the construction of the Analostan Causeway in 1805,* and the building of the Long Bridge in 1808. † It may be that these structures did promote the development of the flats and obliteration of the middle channel, but the early maps (1792-1800) of the city and river front mark the areas of shoal water corresponding with the location of the flats. Fortunately these flats have been reclaimed into an area of 621.12 acres of park-land,‡ which in time to come will add beauty to the water front and contribute to the pleasure of the citizens.

L'Enfant, in 1791, measured the Anacostia River, at the point where the Benning Bridge is now located, to the depth of four and a half fathoms of water. At that time the current was along the western shore to its mouth. The existing extensive area of flats must therefore be a later formation, probably finding its cause in the building of the bridge at the foot of Kentucky Avenue in 1795, and the Benning Bridge in 1797. The citizens of that early date did not consider the possibilities of injuries which their enterprises might inflict upon the after-coming generations. How much the construction of the northeast boundary intercepting sewer, completed in 1885, has contributed to the rapid extension of the marshy area since that date cannot be determined beyond the belief that it has been such a potential factor in pro-

*An act of Congress authorizing the Corporation of George Town to make a dam or causeway from Mason's Island to the western shore of the river Potomac, January 19, 1805.

† An Act of Congress authorizing the erection of a bridge over the river Potomac, within the limits of Columbia, February 5, 1808.

‡ Including the reservoirs the total area is 739.42 acres. Act of Congress, August 2, 1882, making the first appropriation for the work.

moting the extension of the nuisance as to necessitate the construction of an intercepting sewer along the western shore of the river to the foot of New Jersey Avenue, which will carry the contents of the boundary intercepting sewer to deeper water and a more rapid current. Congress, during the last session, made an appropriation for a preliminary survey with the view to begin the reclamation of the Anacostia flats.

So much for drainage and sewage sanitation. There is, however, another phase of municipal hygiene and preventive medicine. I refer especially to the activities of the medical profession in determining and eradicating the causes of preventable diseases. In the earlier decades there does not seem to have been any organized effort, not even in protest against legislation creating, extending, and establishing nuisances detrimental to health, much less in promotion of sanitary reforms. In 1797, in a population of two thousand, but seven deaths occurred in this city.* During succeeding decades fatal epidemics of "bilious fever," "intermittent bilious fever," and "bilious dysentery" prevailed at intervals of one, two, and three years, and of smallpox at longer intervals. In 1797 inoculation was first practised in this city, and in 1801 vaccination was introduced by President Jefferson. In 1832 the first and only invasion of Asiatic cholera occurred.

The first organized effort at sanitation was the appointment, in 1819, of a health officer,† charged with the duties of reporting to the Mayor "all nuisances * * which might endanger the health of the citizens; all sources of disease, prevailing epidemics, and contagious diseases," with recommendations of means "to remove the evils, restrain their progress, and prevent their recurrence," and "to keep a correct register of deaths." In 1822‡ this office was abolished by the establishment of a Board of Health, composed of one physician and one layman from each of the six wards into which the city was then divided. To this board was granted the additional power to formulate a "code of regulations regarding the preservation or restoration of the health of the city, particularly in regard to pestilential or contagious diseases." With powers limited to the adoption of resolutions and submission of recommendations to the Mayor, without the authority to enforce any declaration or condemnation of a nuisance, but little if any progress was made in sanitation, until the cholera invasion in 1832, when the board asserted its authority in the establishment of hospitals§ under its direct and exclusive control, together with the adoption of such regulations as seemed best to limit the prevalence of the epidemic.‖ During subsequent years it seemed to have occupied

*Washington Gazette, 1797.

†An act to provide for a health officer for the City of Washington, August 14, 1819. Dr. Henry Huntt was appointed Health Officer.

‡An Act establishing Board of Health for the City of Washington, March 30, 1822.

§Three hospitals were established. Toner's Anniversary Address.

‖Under the authority to formulate such regulations the board claimed the right to exercise arbitrary powers, an example of which may be found in the ordinance declaring the "vending of ardent spirits in whatever quantity was a nuisance" and "directed the discontinuance of the sale of such spirits for ninety days from August 14, 1832."

And on August 16, adopted a regulation prohibiting the introduction and sale of the following fruits, vegetables, etc., within the limits of the city "after the 22d instant, for the space of ninety days."

Cabbage, green corn, cucumbers, peas, beans, parsnips, carrots, eggplant, simblins or squash, pumpkins, turnips, watermelons, cantaloupes, muskmelons, apples, pears, peaches, plums, damsons, cherries, apricots, pineapples, oranges, lemons, limes, cocoanuts, ice creams, fish, crabs, oysters, clams, lobsters and crawfish."

Tomatoes, beets, potatoes and onions were not included in this declaration of nuisances.

itself mainly in futile efforts to establish a hospital, until 1844 when, through its influence, the Washington City Infirmary, the first public general hospital in this city, was opened for the reception of patients. In 1846 Dr. Henry Huntt was succeeded in the presidency of the board by Dr. Thomas Miller, who, as the saying goes, took the bit in his mouth and asserted, with untiring persistence and vigor, the province of a board of health with sufficient authority to enforce its mandates. Additional powers were, year by year, granted by the City Council as it sought to extend and execute its authority. The scope of its usefulness was enlarged, with power to condemn and abate, as well as to declare, nuisances detrimental to health, to make and enforce regulations for the registration of vital statistics, and to provide medical care for the indigent sick at their homes. Dr. Miller never shirked a public duty or sought to escape from its responsibilities, and if he had been sustained as he deserved to be he would have accomplished many sanitary reforms of permanent value to this community. The lack of support may be illustrated by the citation of the following preamble and resolutions adopted June 30, 1849:

WHEREAS, The low grounds bordering on St. James Creek were, on the 15th of January last, declared by the action of this board in a state of nuisance, and no steps appearing to have been taken to abate the same; therefore

Resolved, That the members of the board for the Seventh Ward be authorized to cause said nuisance to be abated as far as practicable, provided it can be done at an expense not exceeding fifty dollars.

After the retirement of Dr. Miller the board continued to discharge its duties along the line laid out by him, but with less activity, until its reorganization and transformation, by the Act of Congress of February 21, 1871, into a political body composed of three physicians and two laymen, which occupied itself for the most part in wrangling, to the amusement of newspaper reporters and chagrin of good citizens. It did, however, formulate some health ordinances of practical value, which remain in force to-day.

The abolition of this board and creation of a health department under the direction of a health officer, by the Act of Congress of June 11, 1878, marks the beginning of an important era in the history of sanitation of the city. The routine course of the health department through a series of years failed to awaken public interest, and not until the Medical Society of the District of Columbia asserted its prerogative in all matters pertaining to the preservation of health, and preventive medicine, and the appointment, in 1894, of the present health officer, did the department assume the full measure of its responsibilities and rise to the high standard of intelligent and active discharge of its duties to the public at large. It must, however, be stated that since the installation of the present form of government, in 1878 the Board of Commissioners has, with commendable energy, prosecuted many measures of municipal sanitation and, in recent years, co-operated in every movement to promote and extend the scope of preventive medicine in this city.

Since the repeal of the corporate ordinance of 1819, which limited the selection of the Health Officer to the membership of the Medical Society of the District of Columbia, that body has not

The public in mass meeting remonstrated against this edict of the board, and appealed to the "Mayor and city authorities to interpose in behalf of the citizens in vindicating the freedom of the market."

held any direct legal connection with the Board of Health and Health Office, except by virtue of the fact that medical members of such administrations were members of said Society, except in the unfortunate organization of the Board of Health under the Act of Congress of 1871. Nevertheless the Medical Society, in compliance with the injunction of the Code of American Medical Ethics, to counsel, advise, and direct communities in all matters pertaining to the preservation of health, and in obedience to the dictates of a beneficent profession, has asserted its prerogative of leadership and will continue, with unabated zeal, to prosecute its privilege along the line of coercive and protective legislation in the interest of preventive medicine. With this view it has, with the co-operation of the commissioners, secured the enactment of laws for the District "to prevent the spread of scarlet fever and diphtheria;" "to regulate the sale of milk;" "relating to the testimony of physicians in the courts;" "to regulate the practice of medicine and surgery, to license physicians and surgeons, and to punish persons violating the provisions thereof;" "to prevent the spread of contagious diseases;" "to regulate the disposal of certain refuse;" "to compel the connection of inhabited and habitable houses with the system of water-supply and sewage-disposal;" "to prevent the adulteration of foods and drugs," and "to regulate cemeteries and the disposal of dead bodies." These, and other enactments secured by the commissioners, with the concurrent support of the Medical Society, within the past eight years, constitute a comprehensive code of sanitary legislation in the interest of State medicine and public hygiene. But they fall short of a complete exhibit of the work of the Society in efforts to promote the sanitary improvement of the city, which is believed to have exercised considerable influence in securing favorable legislation by Congress.

In 1894 the Society adopted and transmitted to Congress the report of its committee appointed to investigate the causes of the undue prevalence of typhoid fever in this city, with the following recommendations, which set forth the conclusions of the Society :*

*1. The immediate abandonment of all wells within the city limits, exception only to be made in case of the absence of the Potomac water-supply, and where the wells, after repeated chemical and bacteriological examinations, have been found to be free from all possible sources of danger; but even these to be abandoned as rapidly as possible.

2. Perfection of the sewage system already existing by replacing, as rapidly as possible, all damaged or defective drains.

3. The introduction of new sewers in advance of other improvements in parts of the city not now supplied with drainage, and the extension of the system as far outside of the city-limits as the rapidly-growing population demands, so as to prevent soil contamination.

4. The adoption of some system by which the lower sections of the city can be more completely drained and the risk arising by the backing up of the tide-water and sewage prevented.

5. The final and safe disposal of sewage.

6. To make all existing privies, vaults, or other receptacles of human excreta water-tight, and by rigid inspection and penalties to prevent the danger from leakage and overflow.

7. The early completion of the plans recommended by Colonel Elliot, in charge of the Washington acqueduct, and now in course of execution, which have in view the sedimentation of the Potomac water, and ultimately the completion of works for filtration and the proper method of purification.

8. The suppression of all privies and the enforcing of the law to make sewer-connections.

9. Careful inspection of all dairies in the District from which our milk-supply is drawn, and the enactment of a law by which no milk shall be sold in the District without a permit from the Health Office. The inspection shall cover an examination of the dairies of all possible sources of infection, including the water-supply.

10. The urging upon the members of the profession of a careful collation of all facts bearing upon mode of infection in each case, and

These conclusions were reaffirmed a year later by Dr. George M. Kober, special sanitary medical inspector, in the report of his "investigation of five hundred cases of typhoid fever, selected at random from those occurring in the District of Columbia between July 1 and October 31, 1895." Again, in 1896, the Society formulated and transmitted to Congress the following propositions, which embody a complete and final statement of its recommendations in regard to the subjects to which they relate.

WHEREAS, The City of Washington, being the Capital of the United States, should be placed and kept in the best sanitary condition; and

WHEREAS, Such condition can only be secured by having every habitation and habitable house connected with an ample supply of pure drinking-water, and with a system of foul-water and sewage-disposal which will promptly remove such fluids beyond the city limits in such manner as to absolutely prevent soil pollution; therefore, be it

Resolved, First: That the general system of water-supply from the Potomac River should be extended so as to be available for the supply of every habitable building now in the city or may be erected within the city limits, and that this provision should be extended as far as possible to the immediately adjacent suburban districts.

Second. That the general water-supply should be purified by sedimentation and filtration (the first being necessary at certain times and the second at all times) before it is admitted to the mains.

Third. That the system of sewerage which has been adopted should be extended *pari passu* with the system of general water-supply until every habitable house can be readily connected with it.

Fourth. With the completion and purification of the conduit system of water-supply all springs, pumps, and wells should be closed by such means and methods as will prove so effective that no human being can obtain drinking-water from either of these sources.

Fifth. As rapidly as possible, *pari passu* with the extension of the conduit system of water-supply and system of sewerage, the owners of every inhabited and habitable house be compelled to make satisfactory connections with such systems of water-supply and sewerage, and all privy-boxes, cesspools, and other method of disposal of human excreta be effectively abolished.

Sixth. Without adequate supply of pure water for all domestic purposes, and sewer connections of habitable and inhabited houses, pollution of soil, food, and drinks, and the diseases due to such pollution, cannot be prevented.*

Some of these recommendations have been made effective by later legislation, and others are as far advanced in course of accomplishment as the time elapsed since the enactment of the necessary laws will permit, with favorable results, as shown by the diminution of the number of pumps to 123,† and compulsory connections of houses with the systems of water-pupply and sewage-disposal to the number of 1748, June 30, 1898, but more distinctly by the extension of the water-mains to 346.74 miles, and of sewers to 382.83 miles, to June 30, 1898, and consequent reduction of the death-rate of typhoid fever from 67 in 1885-1890 to 48 for the year ending June 30, 1898, to every 100,000 of the population.*

The death-rate from whooping-cough in 1875-76 was 0.22 per thousand. The highest point reached since that time was 0.65 in 1888-89. For the year just ended it was 0.30.

The death-rate from consumption in 1875-76 was 3.69 per thousand. In 1879-80 it reached its highest point, 4.20. During the year just ended it was 2.38.

In diarrhœal diseases, whooping-cough, and consumption the death-rate has been uniformly higher for the colored race than for the whites.

the advantage of reporting such facts to the Society, and the propagation of the doctrine that immediate disinfection of the stools is the first duty of the physician as guardian of the community.

Report of H. of R., June 14, 1890.

*Senate document, No. 183, 55th Congress, 1st Session.

†To this number must be added 31 drilled wells, a recent but questionable attempt to secure a pure drinking water.

*In calculating the death-rate of typhoid fever, deaths reported due to typho-malarial fever are charged to the typhoid fever death-rate.

In 1875-76 the death-rate per thousand from diarrhœal diseases was 3.22; it has not been so high at any subsequent time. For 1897-98 it was 1.14.

In 1875-76 the death-rate from measles was 0.02 per thousand. It reached its highest point in 1883-84, when it was 0.89. For 1897-98 it was 0.03. There has been no constant relation between the death-rates of the two races from this disease, the rate for the colored being sometimes higher, and sometimes lower than for the whites.

The death-rate from scarlet fever in 1875-76 was 0.03 per thousand. The highest point reached was in 1876-77, 0.09. The rate for the year just ended was 0.05. With the exception of a single year the death-rate from scarlet fever has been much higher among the whites than among the colored.

The death-rate from diphtheria was in 1875-76, 0.25 per thousand. The highest point reached was in 1877-78, 0.73. The death-rate for the year just ended was 0.46. The relation between the death-rates from diphtheria of the two races has not been constant, although the whites have suffered most.

To demonstrate more completely the beneficent effects of sanitary reforms, the following comparative illustration may be cited:

In 1870 the cities of Berlin and Washington were alike in primitive and objectionable methods of sanitation. Without adequate distribution of insufficient water-supply, the larger part of their populations was dependent for drinking-water upon public and private wells. Without systems of sewerage, both were alike supplied with makeshifts for the disposal of human excreta, foul water, and house sewage. The unpaved streets were the common receptables of garbage refuse, and along the gutters the surface drainage and house-drainage were conducted to the neighboring water-courses. Since the city of Berlin began the system of sanitary improvement, completed in 1890 at a cost of fifty-nine millions of marks for a pure and ample water-supply and forty-two and a half millions for construction of sewers, the death-rate from typhoid fever has fallen from 143 in 1872 to 4 in 1894, per 100,000 of its inhabitants. Mark the difference, however, that our typhoid fever rate is still twelve times greater than that of Berlin, a condition entirely due to the fact that the German Capital has a pure supply of filtered water, while we are compelled to have recourse to water from the Potomac River, where pollution has been established beyond a question of doubt.

Other investigations, reports, and recommendations emphasize the work and influence of the medical profession in the promotion of sanitary progress, as shown in the report* of Senator Proctor in favor of "making an appropriation for the improvement of the Anacostia River and the reclamation of its flats," which is, for the most part based upon a report of a committee and the testimony of members of this Society.

Municipal sanitation includes the establishment and management of hospitals, dispensaries, and other medical charities. Every hospital,† general and special, in the city and every dispensary owes its foundation and success to the leadership, activity, and enterprise of some one or more of the medical profession, and here, as elsewhere and everywhere in all times past and in all civilized countries, the progress of sanitary science and reform is due to the medical profession, which in order to fill the measure of its philanthropy goes so far as to advocate laws which will limit disease to the unavoidable ailments "to which flesh is heir," and thereby lessens its own income. It has likewise been foremost in efforts to correct the abuses of medical charities and to reduce the expenses of such institutions to the minimum cost of adequate maintenance.

In the foregoing résumé of the history

*Senate Report, No. 454, 55th Congress, 2d Session.

†Personal Reminiscences, by the author, pp. 212, 244.

of sanitation of this city, covering a period of one hundred and seven years, I have given credit where credit is due Many incidents, circumstances, and data. have been omitted, but the record is sufficiently full to show the magnitude of the work accomplished and in progress to the end that with the completion of the system of sewage-disposal and adequate extension and purification of the water supply this city will be among the foremost of the most favored cities of the world in all that pertains to the prevention of avoidable diseases.

ILLUSTRATIONS.

PLATE I.

Map showing the farm subdivisions of the original territory of the site of the Federal City ; the names of the original proprietors ; the location of the villages of Carrollsburgh and Hamburgh, and the courses of the boundary rivers, Rock Creek and the streams penetrating the territory.

PLATE II.

Map showing the four rows of Lombardy poplars along Pennsylvania Avenue from the foot of the Capitol to 15th street, west, and a view of the city in 1833, with a view of the President's House. View taken from the foot of the Capitol.

PLATE III.

Map of the city in 1792, showing the plan of the city, the water courses, with the soundings of the channel of the Anacostia River along the eastern shore line of the site and the area of shoal water in the middle of the stream. Also the course and soundings of the three channels and the areas of shoal water of the Potomac River in front of the city, marking the area and locality of the reclaimed flats of the Potomac River. The middle channel has been obliterated and the areas of shoal water as shown are now comprised in the area of reclaimed flats.

PLATE IV.

Map of the original Territory of Columbia, showing the outlines and topography of the Ten Miles Square, the location of the cities of Alexandria, Georgetown and Washington, the courses of the Potomac and Anacostia rivers, with their tributary creeks and streams and the lesser branches emptying into them, the Colonial roadways communicating with the distant villages in Virginia and Maryland, and the canal around Little Falls, constructed by the Potomac Canal Company, chartered by Act of the Legislature of Maryland in 1784. It shows also where the rivers were crossed by ferries, one at Georgetown and two at the mouth of Oxen Run across the Potomac, and one across the Anacostia at the terminus of the road to Upper Marlboro, Maryland, which, perhaps, connected with the only roadway from Georgetown through the farm lands of the original proprietors. Below Alexandria may be seen the mouth of Hunting Creek, and Jones' Point, where the corner stone of the District of Columbia was laid April 15, 1791. The plan of the City of Washington, as designed by L'Enfant is shown in outline.

THE MILITARY SURGEON

A SUPPLEMENT TO THE

NATIONAL MEDICAL REVIEW

UNDER THE CHARGE OF

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VOL. II. WASHINGTON, D. C., ARRIL, 1899. NO. 2.

Original Articles.

INSTRUCTION IN FIRST AID. ITS NECESSITY IN MODERN ARMIES.

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In modern war the requirements of humanitarianism go hand in hand with the highest obtainable methods of physical disablement and life destruction.

In consequence, both from the individuals directly engaged and from the communities from which they come, there is imperative demand that all possible means be employed to ameliorate the suffering and save the lives of those who, from the action of the destructive mechanical instruments of war, are rendered useless as offensive or defensive factors.

This being the case, it is necessary that each individual who is exposed to these destructive mechanical agents, should be put in possession of certain elements of knowledge as to how to immediately care for himself or his companion when injured by these agents. This necessity for first aid knowledge, as it is called, arises in great part from the use of the improved mechanical appliances now employed in warfare, namely long range firearms, magazine rifles, and smokeless powder.

Before these modern appliances were in use, conditions relative to the care of the wounded were different from those which now obtain when armies armed with weapons of long range and flat trajectory meet. The comparative short range of the rifles formerly used and their high trajectory made the danger zone a comparatively narrow one. Then danger was great only in the immediate vicinity of the fighting line and men but a short distance to the rear were comparatively speaking out of danger. As a result, wounded men had to be transported, or travel by their own efforts but a short distance to the rear in order to be practically out of danger of further injury. Then dressing stations could be established within easy reach of the fighting line and ambulances could be placed at no great distance from it and yet be be-

yond the reach of deadly fire. Consequently, in most cases, comparatively prompt attention could be given to the wounded and excessive mortality of the injured and the complications arising from delay in assisting them could be prevented through the prompt assistance rendered.

But let us examine into what will occur when two armies meet which are equally trained and armed with modern weapons. In the early stages of an engagement where artillery is at work at a range of, say, from 2500 to 3500 yards, the casualties will be comparatively few and from the very nature of artillery fire will be confined to such an area that the injured can be easily and quickly attended to. But with the advance of the infantry matters will assume an entirely different aspect. The infantry will come under rifle fire as soon as it reaches a visible range, say 1700 yards, and from there on to 500 yards, where the firing will be point blank, it will be under a dangerous fire whenever seen. For it is not to be supposed that infantry will attempt to advance over a level plain against modern arms for a distance of 1700 yards. But it will be exposed at times and what will be the result. Let us suppose a fire from a six gun battery; a regiment of infantry 700 strong, armed with the modern rifle; and two Gatling guns. If an enemy appears within effective rifle range of the force described what will occur in one minute according to a conservative estimate? In that one minute thirty-six shrapnel will have been hurled at the advancing enemy and each shell will have burst about 200 yards to their front. At the low estimate of 250 fragments from each shell, 9000 pieces will be hurled over the ground striking from 200 yards in front to 250 yards in the rear of the advancing enemy. At the same time, the two gatlings have delivered 1600 shots; or if supplied with a quick firing, multiplying arrangement, 2000 shots; and the 700 rifles have been discharged 14,000 times, or twenty times each. Thus in but sixty seconds the space in front of a six gun battery, a regiment of infantry and two gatling guns, has been swept by the tremendous storm of 24,600 missiles of destruction. And during that time the bullets from the long range rifles have been ricochetting and tumbling, glancing and taking flying leaps, and searching out every nook and corner for hundreds of yards to the rear of the fighting line. Think of the continuation of such a fire and the effect not only on the fighting line but for hundreds of yards to its rear. Nor is this exaggerated. Remember how with much less effective weapons the Germans lay dead and dying around St. Privat where 500 men fell in fifteen minutes and eight hours saw 21,000 Germans and 12,273 French dead or wounded; and the testimony of the Balmacedists who had been under magazine fire in the Chilean war and who declared that they would sooner be shot outright at the beginning of a fight than undergo the mental torture of that leaden hail again.

And our own experience in the late war with Spain is in accordance with this. The great extent of the danger zone, the terrible effect of the Spanish fire which, ill directed as it was, cost us great numerical losses and which, had it been directed by troops the equal of ours would have totally prevented the accomplishment of the gallant charges which took San Juan and captured El Caney. In these actions we know that in many instances immediate assistance to the wounded was impossible.

Captain Lee, British Military Attaché,

writes of the wounded of the Seventh Infantry, in the sunken road near El Caney: "Hour after hour these wounded men had lain in the scorching sun, unattended and often bleeding to death. Their comrades had in many cases applied the first-aid dressings in rough and and unskilled fashion, but so far as one could see there had been no medical assistance. The nearest dressing station was three-quarters of a mile to the rear."

The absence of immediate aid has been attributed by some to the presence of an insufficient number of medical officers. They forget that never in war has it been possible to have a sufficient number of medical men to follow the shifting movements of troops in battle and instantly care for the wounded. Still less will it be possible to do so under the present conditions of long range fire and increased width of the danger zone, for an attempt in that direction would leave few medical officers to attend to the wounded after the battle.

The English and Japanese put medical officers in the actual fighting line for the purpose, as they frankly avow, not alone of rendering immediate aid to the wounded but for the great moral effect it has in promoting confidence in the troops. As a military expedient this is justifiable, for to a military commander anything is justifiable which will win, or aid to win victory.. But medical officers so placed really have a military rather than a surgical function, and exposed as they will be, the mortality with them will be great and the aid they can furnish but slight. In this connection, it is to be noted that in the late Japanese war the percentage of casualties was greater among medical officers than in any other branch of the service. It may be considered therefore, that whatever moral support the presence of medical officers may give on the fighting line their effective aid to the wounded will not be great.

Such instances as that of which Captain Lee writes are therefore bound to occur in future wars. They have been predicted by authorities in the past, were anticipated by men of experience before the late war and that assistance to the wounded was rendered as promptly as it was, and with such brilliant results in low mortality of the wounded, will redound to the credit of the Medical Department when the first wave of hysterical misapprehension aroused by a sensational press shall have given way to conclusions based on actual statements of fact. But not only will the wounded in war in many instances be deprived of immediate assistance through inability to render aid on the fighting line but from the impossibility of removing them beyond the danger zone.

The long distances searched out by long range fire and its destructiveness at long range have caused the great Austrian surgeon Billroth and the Prussian Bardeleben to concur in the conclusion that "in future it will be no longer possible to remove the wounded from the field of battle by means of bearers, since every man of them would be shot down. And the most that can be aimed at is that the wounded man of the future shall be attended to in twenty-four hours," (Billroth) and "that the whole system of carrying away the wounded on litters during the battle must be abandoned, for it is altogether impracticable." (Bardeleben) These words are not the utterances of theorists but the convictions of men who have seen and directed the best sanitary soldiers of Europe and have participated in the campaigns of 1866, 1870

and 1877-8. And the same conclusions have been voiced by the great war correspondent Archibald Forbes—whose experience you know—who has seen Plevna, Mars-la-Tour and Gravellotte and who declares that the immediate or prompt rescue of the wounded in future battles will not be possible or attempted. These conclusions are based not only upon the extent of the danger area but upon its extent combined with the physical inability of a reasonable number of bearers to remove the wounded beyond it. It is obviously useless to move the wounded to a place where they are still exposed to danger and to move them the distance required for safety will require an amount of physical exertion and a number of trips impossible for the bearers to perform, even laying aside the possibility of casualties to which they themselves would be exposed. It is therefore argued that success and victory will secure best protection for the wounded and the commander who gives precedence to ammunition trains, who uses every available man for fighting and who by disregarding all but the paramount object in war of victory at any cost and who wins the victory quickest will be in position soonest to render aid to the wounded.

So until the battle is over, swept as the field will be by bullets, every man should know how to help himself or his comrade. To stanch the flow of blood, to aid himself as best he may, to get to some shelter and wait for the storm of battle to pass and help to come will be the lot of the wounded. Not pleasent to contemplate, but a fate met by many men in past wars and which must be met by many more in future ones. These are the reasons which have led to first aid instructions in all the great armies of to-day and in our own service have produced General Orders No. 60 of 1897, which direct that every enlisted man and every company officer serving with troops shall be instructed in first aid.

The question now arises what knowledge of first aid should be given and the best method of imparting it. In devising a scheme for such purpose many things must be considered. The intelligence, or lack of it of the men to be instructed ; the necessity for explicit directions, devoid of detail, technicalities or confusion; the briefness necessary, for much time cannot be devoted to it, especially where large numbers of men have to be instructed and where the greater part of their attention must be directed to mastering purely military matters. Certainly the average soldier can never be expected to remember the location or technical names of the arteries, bones, or other organs, and only confusion would arise from an attempt to burden the enlisted men with such details.

Apropos of this let me quote from the general report of the North Atlantic Inspection District, made June 11, 1897, by the Inspector General of that district. He says "The present system of instruction of the enlisted men of the command in rendering first aid, transportation and care, etc., of the injured is not satisfactory.

"In entire complaisance to the authority on which General Orders No. 60, A. G. O., 1897, rest, and devoid of all wish to criticise, I desire to say that a careful study of the instruction during the summer, as shown by the inspection of the various garrisons, convinces me that the present plan does not secure the best possible results.

"The drills held by company officers are too deficient in practical application. The company officers do not wish to get down to practical application of a

suitable compress on the femoral artery in the upper third of the thigh, etc., and it is not promotive of discipline that they should do so. He therefore contents himself with tieing up the trouser leg. The Company officers are apt to have these drills on the parade ground and, under such conditions, the uncovering of different parts of the subject's person is not a becoming thing to do; the men do not like it, and, in consequence the instruction is not thorough."

This criticism appears to me to be entirely just. The cause however seems to me to be somewhat deeper than would be inferred from the report. It is due, I think, to the fact that while General Orders, No. 60 of 1897 prescribe that instruction shall be given, there is no definite system of instruction laid down and it is left to each instructor to decide what should and what should not be taught.

In his criticism the Inspector uses the application of a compress to the femoral artery as an example, and following this illustration, there is, in my opinion, no reason why the men should know that there is a femoral artery, or its location. Attempts to impart such technical knowledge only confuses. But there is no reason why they should not have sufficient knowledge to enable them to stop bleeding from the leg, whether it comes from the femoral or any other artery, and this knowledge is so easily imparted and so easily understood that if the men are not confused by some well meaning instructor who attempts to tell them the difference between arterial and venous hemorrhage, and what and where each artery is, instead of simply showing them how to make a torniquet of a handkerchief, or some suitable material, telling them to put it on as high up as they can and then twist it with a stick or bayonet until the bleeding stops, all conditions compatible with the intelligence of the men, the time at the instructors' disposal and the probabilities of emergency in such cases will have been met. And it is really surprising to note to what few, short, and simple, rules the real essentials of first aid for soldiers can be reduced. In the military service there is no necessity for instruction in those branches of first aid which deal with drowning, poisoning, and like accidents. There will nearly always be surgeons available in such cases and such information only should be imparted as will be required when there is every probability that no assistance will be at hand.

In fact, military aid should, in my opinion, be entirely confined to the immediate handling of gun-shot wounds. And here as a practical illustration I wish to call attention to the fact that Dr. L. Diemer, Stabsartzt in Dresden, has really given all the actually necessary directions which the ordinary man can understand and carry out, in a series of plates but six in number. These plates show definitely what a wounded man should do and, in addition, have on each plate short and simple directions for the doing of it. The directions are couched in plain language, are devoid of technical terms and are so easily understood and followed that any person of ordinary intelligence can practice them.

Take for instance the following, relative to how to deal with wounds.

1. Never touch a wound with anything unclean, dirty fingers, dirty water, etc., it may cause inflammation or blood poisoning.

2. Expose the wound by removing the covering articles of dress, which contain many impurities, unbutton or cut clothes

and examine the extent of bleeding.

3. If the wound does not bleed at all or only a few drops at a time, no immediate bandaging is necessary, leave this to the bearers.

4. If a bandage is advisable to protect the wound from dirt, insects, flies or cold, use the little packet described in Plate III.

These rules are examples, the others are equally clear, brief, and explicit, and can be taught and understood by any one. Furthermore they embody all the average enlisted man can understand or intelligently practice.

In my opinion if a small book of such rules with necessary plates could be furnished company officers and the men drilled to follow the directions much as they are drilled to handle a rifle, all necessary instructions in first aid could be quickly and easily given. And this would be the kind of first aid instruction which would be of real practical value. Men thoroughly trained in these simple but explicit directions would be able in many instances to care for themselves or their comrades until the storm of missiles which in battle prevents help from coming passed and trained assistance arrived.

Selections.

Gloves in Surgery, Cotton vs. Rubber.

In the present state of surgical asepsis all sources of infection may be practically excluded except the skin of the patient and the hands of the operator and his assistants. The belief that the skin of the patient is not usually the source of infection is strengthened by the fact that the disinfection of the field of operation is usually much more prolonged and thorough than is that of the hands of the operator and his assistants, and by the fact that operations in which the hands do not come in contact with the wound are apt to be followed by excellent results, notwithstanding that the cut and bruised condition of the skin decreases its vitality and resistance to infection. It should also be remembered that the skin of the patient can hardly be said to come in contact with the wound.

Halsted, as a result of his experiments on the disinfection of the hands, came to the conclusion which is now held by many observers, that it was practically impossible to secure absolute disinfection of the hands by existing methods. Even after a condition of surface sterility is obtained, the deeper layers of the epidermis contain bacteria which by prolonged maceration, such as is involved in a long operation, are set free. However careful the surgeon may be, the fact remains that infection may occur from his hands or from the hands of his assistants. It is believed that this difficulty can be in a great measure overcome by covering the hands with a material which can be made absolutely sterile, and which, while impermeable to bacteria, does not materially interfere with the sense of touch, the handling of instruments, ligatures, etc., or the manipulation of such delicate tissues as the peritoneum and intestines. These considerations led to the use of gloves. The character of the glove to be used is of the utmost importance and should have careful consideration.

Halsted has used rubber gloves from the first. Mikulicz, of Breslau, introduced the use of the cheaper cotton gloves; he does not now use them in their original state, but incorporates in them some impermeable material or employs a glove made of impermeable material. Keen used cotton gloves in his clinics at the Jefferson Hospital, but, not being satisfied that they would prevent all infection occurring from the hands, he suggested a series of bacteriologic in-

vestigations to determine their value. These experiments were conducted in the laboratories of the Jefferson Medical College Hospital, under the supervision of Prof. W. M. L. Coplin, director of the laboratories.

1. The hands were disinfected. The finger nails were cut short and cleansed. The hands were then scrubbed in hot water with green soap and a brush. They were then rubbed with a mixture of equal parts of calcium chloride and sodium carbonate, especial care being taken to cleanse the finger nails, the paste formed by the mixture being pushed around the edges and under the nails by a blunt-pointed orangewood stick kept for this purpose. The hands were then washed in sterile water and scrubbed in bichloride solution 1:1000.

A glove sterilized in a steam sterilizer for one hour was drawn on the disinfected hand, and one finger of the hand was held in a large mouth test tube containing beef peptone bouillon, the glove finger being moved around in the bouillon for five, ten, and fifteen minutes respectively. A different finger and a different glove were used in each instance, as was also done in the experiments below. The mouth of the test tube was passed through a flame before introducing the finger. The tubes of bouillon were incubated at a temperature of 37° C. for three days, at the end of which time they remained sterile.

2. A sterilized glove was drawn on a non-disinfected hand and a glove finger held in bouillon for five, ten, and fifteen minutes respectively. The tubes of bouillon were incubated and all sooner or later showed infection, the bacteria of suppuration predominating.

3. A non-disinfected finger was held in a bouillon culture of bacillus prodigiosus five minutes. A sterilized glove was drawn on and the finger moved around in a wide-mouth test tube containing bouillon for five, ten, and fifteen minutes respectively. The three tubes of bouillon were then incubated; the tubes quickly showed infection in each case.

4. A sterilized glove was drawn on a disinfected hand and a finger moved around in a bouillon culture of bacillus prodigiosus for five, fifteen, and thirty minutes respectively. The glove was taken off and a finger moved around in a tube containing bouillon for the same length of time as in the previous experiment. These tubes were then incubated and were found to contain in all cases the bacillus prodigiosus.

5. A sterilized test tube and a sterilized glove were taken and one finger of the glove placed in the test tube. A bouillon culture of prodigiosus was poured into the finger of the glove; the pigmented bouillon passed through the glove at once; incubation showed that the glove in no wise prevented the passage of the germ.

6. Gloves were also paraffined according to the method of C. Menge, as follows: Dry gloves were immersed in alcohol, then in pure xylol, then in xylol containing ten grammes of paraffin in solution to each one hundred cubic centimetres of xylol. This solution was kept slightly warm and the gloves allowed to remain in it fifteen minutes, when they were wrung out and dried. A finger of one of these sterilized, paraffned gloves was placed in a sterilized test tube and a bouilion culture of prodigiosus poured into the finger. The bouillon culture passed through the glove and was found to contain the bacteria in question.

7. Thinking the fibrin of the blood might so fill the meshes of the glove as to prevent the passage of bacteria, sterilized, paraffined and non-paraffined gloves were immersed in fresh blood (bovine), wrung out and allowed to dry. A bouillon culture of prodigiosus poured into a finger of each glove passed through and was found to contain the bacillus prodigiosus.

8. In addition to the experiments with paraffined gloves just mentioned, the same experiments were made with them as with the unparaffined gloves, and with the same results. Both the thin German gloves, procured by Prof. Keen, and the heavier gloves purchased in this country were used in all the foregoing experiments. It was found that these gloves could be sterilized in the autoclave for twenty minutes at a temperature of 111° C. or in a steam sterilizer for one hour, and that when so sterilized were found to be free from germs. It was also found

that the paraffined gloves could be sterilized one hour in the steam sterilizer without any apparent damage to the paraffin.

The results of the above experiments seem to prove the absolute inefficiency of cotton gloves; both in their original state and when paraffined they fail to prevent infection from the hands. It therefore becomes necessary to look further for a glove which may accomplish the purpose desired.

Perthes, of Leipzig, uses rubber gloves or silk gloves with a rubber covering, and with these on the hands one can feel even the light touch of a brush. Halsted uses India-rubber gloves, which, after boiling, are dropped into large basins containing mercuric chloride solution, filled with this solution by the surgeon who is to wear them, and drawn on while full, the hands having been previously disinfected as if the gloves were not going to be worn. The same chain of reasoning already presented in this article led McBurney of New York to adopt the use of rubber gloves.* His gloves are prepared by washing them with soap and water to which a little aqua ammonia has been added. They are then boiled for fifteen minutes in a one per cent sodium carbonate solution and laid in the center of a sterilized towel. The towel is folded over the gloves and not opened until the operator and his assistants are ready to put them on. If the dry hands are rubbed with dry sterilized starch, the gloves can be drawn on with ease, even if their interior is moist. If the hand is moistened with glycerin or lubrichondrin, wet gloves may be easily drawn on. Filled with any sterile fluid, the gloves permit the ready entrance of the hand. If the latter method of putting them on is adopted, the hands must be previously as thoroughly disinfected as they would be if gloves were not going to be worn. If the hands are not disinfected, and the accident of tearing or puncturing the gloves occurs during the operation, the wound will most likely become infected, because such accidents may occur without being recognized in time to prevent infection. Previous disinfection of the hands is most important to the operator who has just adopted the use of the gloves, for, on account of not being accustomed to their use, tears and punctures are more likely to occur. When one has become accustomed to gloves the probability of such accidents occurring is slight; but, unless want of time forbids, the hands should always be as thoroughly disinfected as possible. Inasmuch as rubber gloves can be boiled, they can be rendered absolutely free from germs; and as they are non-absorbent, they must remain so, unless they come in contact with septic material. It is claimed that they are impermeable to bacteria, and, if occasion demands, a surgeon having a suppurating lesion upon his hand may operate without danger to the patient from this source, provided tearing or puncturing of the gloves does not occur.

To the army surgeon rubber gloves are a great aid in securing asepsis. On account of the varied duties incident to his office, his hands are not infrequently rough, and there is therefore greater difficulty in disinfecting them. He may be compelled to operate continuously for a number of hours, and may not have time for prolonged disinfection of his hands; and even if he has the time, the repeated scrubbing and immersion in disinfecting solutions might greatly irritate them.

At first there is some difficulty in manipulating instruments, ligatures, etc., but with constant use this is soon overcome; and it is claimed that one wearing rubber gloves can easily recognize adhesions, slight differences of consistency, irregularities of surface, or feel a feeble pulse. Those who have adopted their use are most emphatic in their praise.

The conclusion is that rubber gloves are of great service to the surgeon and enable him to more certainly obtain aseptic results, but that no other form of glove is of material use. Lockett, Phila. M. J., Feb. 11, 1898. Rev'd in Am. J. Obst., N. Y., 1899, xxxix, 404.

*See National Medical Review, 1898, vii, 447.

Disposal of Refuse, Garbage and Sewage in Camps of Instruction.

Next to an adequate supply of pure water no question is of greater importance to a camp or garrison than the sanitary disposition of its refuse and sewage.

DISPOSAL OF REFUSE AND GARBAGE.

As to the gathering and removal of refuse and garbage, including the litter and manure of horses and other animals kept in and about the camp, all this material should be kept in water tight covered receptacles, and removed from the camp every morning. The garbage, especially, should be kept in covered cans made of galvanized iron. Before these cans are brought back to camp they should be thoroughly washed and treated with a disinfectant fluid. All this is necessary to reduce to a minimum the number of flies which are known to be such an important factor in carrying and spreading infectious and contagious diseases.

The place of disposal of refuse and garbage should be at some distance outside of the camp. The wagons or carts in which refuse and garbage are removed from the camps, should have water-tight iron boxes with covers, and after being unloaded they should be washed and thoroughly cleansed before being returned to the camp for further loading.

Various methods can be employed for the ultimate disposal of this garbage and refuse. One of the methods which is especially to be condemned is the practice of allowing the cooks to sell garbage for feeding purposes to irresponsible parties, who would gather it and cart it away from camp in vehicles constructed without any regard to cleanliness or sanitation. The gathering and disposing of the refuse and garbage in camps should be carried on under the direction of the medical health officer in charge. Another method to be condemned is that of burying the garbage in the immediate vicinity of the camp ; and another, that of spreading it upon the surface of the ground near the camp, to be removed when dried. These are dangerous procedures which vastly increase the number of flies, which even with the greatest possible precautions are always very numerous in and about a military camp.

For the ultimate disposal of refuse and garbage only two methods will be considered : First, that of cremation ; second, that of extraction. The first method implies the total destruction of the refuse by fire. The second implies a saving of the resultant product, which may be used as a fertilizer.

It is hardly worth while to use the extractive method for the treatment of refuse and garbage of a military camp, for the reason that this method can be economically employed only where there is a large amount of material to be disposed of, as in the case of large cities, since the machinery and apparatus required for the process is very expensive. Furthermore, the best practical results can be obtained by the extractive method only where garbage proper, free from refuse of all kinds, is handled. The garbage and refuse from a military camp would be of a mixed nature, for the destruction of which we must look to cremation as the best possible method.

Different styles of crementories are in use, and I may mention that those of the Mann, Rider & Engel patterns that are in operation in many places, and so far as I can learn, are doing their work satisfactorily. As to time required for construction, it would seem that a crematory could be built in at least thirty days, but, of course, the time required would be influenced somewhat by local conditions, shipment facilties, and the like. An important question is that which relates to the primary cost of construction. It is impossible to give a definite answer to this query, "for the reason that cost must depend very largely upon availability of materials, command of skilled labor" and the size and capacity of the furnace demanded. The cost of operation after the furnace is constructed is also of great importance. In estimating this, we must also take into consideration location and available fuel supply. Economical management of the furnace and the class of garbage to be disposed of will also influence the matter to a considerable extent.

The Mann furnace, in Montreal, disposed of miscellaneous refuse, excluding night soil, at 25 cents per ton ; this low rate would probably not obtain in a plant on a small scale, such as would be necessary in a camp of instruction. The Engel crematory in Milwaukee, is said to have disposed of a mixed refuse for 19 cents per ton.

DISPOSAL OF SEWAGE.

The introduction of an abundant water supply in a military camp is, of course, followed by more or less lavish use of water for domestic purposes, which necessitates a system of sewers for carrying off liquid wastes and human excreta. These sewers must have an outlet, and the proper sanitary disposal of their rejected contents presents for solution a sanitary problem of grave consequences.

No municipalty, village or military camp has any right to allow its wastes to pollute the soil, air or water of any other community. It would be well if an arbitrary law universally prevailed that compelled every community to destroy its own waste within its own precincts, and not to pass on to its neighbor anything that is contaminated.

There are two methods of sanitary sewage disposal, either of which would be eminently fit for adoption and use in a permanent military camp, viz.: the method of purification by bacterial oxidation and the method of chemical treatment, precipation and sedimentation. The method of purification by bacterial oxidation is familiar to all sanitarians, but those who desire to study the subject in detail can procure pamphlets, descriptive of the method, by addressing the D. A. Tompkins Co., engineers and contractors, of Charlotte, N. C.

Plants for the treatment of sewage by bacterial oxidation are in successful operation at Willow Grove Park, Pa.; Holmwood Park, Brooklyn; Tuxedo Park, and elsewhere. The plant at the Western House of Refuge for Women, at Albion, N. Y., was constructed under the supervision of Guthrie and Rockwood, engineers, of Buffalo, N. Y., at a cost of about $6,000, and will take care of about 50,000 gallons of sewage daily. This method is a very desirable one for a permanent military camp. The greatest outlay would be for primary construction: the cost for maintenance and operation, very small.

The treatment of sewage by precipitation and sedimentation has proven a success at Coney Island, N. Y., Round Lake, N. Y., the Soldiers' Home, at Bath, N. Y., and at Echota, N. Y. In this system the disinfecting and discharging apparatus is operated automatically by the sewage itself, and it makes no difference whether the tanks are discharged once a week or once an hour. The only objection that can possibly be urged against this method is that the process is considered expensive. It has been demonstrated that the cost of treating chemically 1,000 gallons of sewage is 6 cents; if we allow fifty gallons of sewage a day per capita, which is, I think, a very liberal allowance, it will be seen that the cost for treating the sewage from each individual would be $1.10 per annum, or about one-third of a cent per day; this of course, is the cost of treatment after the plant is completed. If some of the chemicals used in the process, chlorine, lime, iron, and the like could be recovered, the cost would be very materially reduced, and I think we are safe in saying that in a camp containing from 10,000 to 20,000 troops, the expense for treatment could be reduced to at least 5 cents per 1,000 gallons.

The following claims have been made for this method of sewage treatment, and it would seem that they have all been substantiated;

1. Concentration. The processes of chemical purification for a large town can be carried on in a building 50 x 100 feet or less.

2. Absolute control of all effluvium, which is so thoroughly destroyed by the chemical processes used, that the interior of the building can be kept entirely free from all sewage odors.

3. Economy in operation, the chemical treatment being largely automatic, so that all the labor required would be one man to superintend the works, and the temporary help of two men for one day per week to remove the sludge.

4. Convenience. The sludge can be made innocuous and inoffensive before removal, so that it can be removed in open carts or stored in the neighborhood. It resembles peat in appearance and has no odor.

5. Immunity from infection. The disinfection of the sewage can be carried far enough, thoroughly to kill all pathogenic organisms so that all danger of infection is removed. Clark(E.) Buffalo M. J., 1899, liv, 580.

THE

NATIONAL MEDICAL REVIEW.

VOL. VIII. WASHINGTON, D. C., MAY, 1899. No. 12.

Original Articles.

HAS MANKIND A RUDIMENTARY SIXTH SENSE IN PROCESS OF EVOLUTION?

BY MARY PARSONS, M. D.*

From time immemorial, or to be more accurate, from the time when man has possessed sufficient mental development to inquire into his relationship with environment, it has been understood that his personality depended entirely upon the harmonious development and judicious use of those recognized channels of consciousness, known and described as the five special senses.

Although many instances are recorded where a deficiency in one or more of these senses has been followed by added increase of power in one or other of those remaining, yet the individual thus affected has been looked upon by the majority of his associates as abnormal, or in the parlance of the present day, as a degenerate.

These same five senses have been supposed to constitute all the factors in the natural evolution of mankind alike on the physical, mental and moral planes. The full and harmonious use of these in absolute perfection of development has been supposed to produce the perfect being, viewed from the materialistic point of view.

But gradually it has dawned upon the world that much of the teaching which was formerly accepted, and particularly much of that special line of teaching which bore upon the specialization of consciousness through these special senses, although so gradually as to be almost imperceptible, yet none the less surely, has been shelved as dead matter. It has become valueless because it no longer serves the purpose of minds that are trained by the later methods of scientific research. Much of the data was deduced from observations which have been proved to be altogether untrustworthy, and as a natural result only faulty conclusions were reached. Many of the early works on Mental Philosophy served their purpose in a certain training of the reasoning powers, but none of them would be accepted as furnishing even quotable material, much less a working hypothesis for the present day.

Better methods are being evolved in these later days, and instrumental precision is replacing the former method of personal observation, which was so often deflected by the personal equation.

That mental processes have not kept pace with material progress, as might have been supposed from casual observation, is due to the fact that comparatively

*Read at the meeting of the Medical Society, District of Columbia, March 22, 1899.

few persons in an age do the thinking of that age, while the masses are consolidated on lines of mental progress.

But that the masses are now becoming aroused from the mental torpor of the past is evidenced by the remarkable increase of what, for want of better nomenclature, is called spiritual thought. A tidal wave of occultism has set in from the far east, which has constantly grown in power from the very moment of its beginning, although disguised under many and various forms. Much valuable work has been quietly done by the Psychical Research Societies both in Europe and America.

Considering these as component parts of a progressive change of thought and teaching, they form, perhaps, all things considered, one of the most astonishing phases of the closing years of the 19th century.

Deep dissatisfaction with past teaching on nearly all lines is a noticeably marked characteristic of this era. This particular age stands out in bold relief as an age of persistent, curious, questioning research, an age that has exhausted all known fields of exploration and must perforce enter upon unknown fields, and having exhausted all known methods in research, must needs have recourse to unknown methods.

That territory which could be investigated by the use of the five senses has been exhausted. The old world and the old learning are alike powerless to appeal to the satiated senses, and we turn to that Immensity of Universe by which we are surrounded, as a legitimate field for exploration, a proper knowledge of which, and a determination of our relationship to which, are equally a duty and a privilege.

For this work, another sense seems to be necessary, in addition to those we already recognize and use; and this other sense which would have to do with the extension and expansion of individual comprehension and power, if we are to believe those who have made careful study of the subject, is already recognized to a limited extent, and is supposed to be capable of indefinite development.

Probably there is no one here who does not know or who has not known some person deprived of the use of one, or more, of the special senses, and yet able to maintain relationship with environment either through the intensification of power of the remaining senses, or by the exercise of an unknown, half-recognized and as yet unnamed faculty. The fact that so many different sects, comprised of such widely different classes of people, are earnestly trying to find name and law for this unknown force seems most conclusively to prove that such force does exist; that its full uses and powers are as yet unknown and unmeasured argues nothing of value against its being. The early application of the power of steam was a very crude affair. Later, electricity lingered long beneath the feet of scientific research. Why should it be surprising that a force as much finer than electricity as electricity is finer than steam, as much more delicate and far more intangible, should be misunderstood and uncomprehended when it is so often investigated by desultory methods, which, in their irregularity and haste, would put the average school boy to shame.

As steam replaced the stage-coach, so electricity is replacing steam; and even so, eventually, may some of the uses of electricity become displaced by this subtle force—perhaps a power of mind—

possibly a form of thought—or, conceivably, something altogether extraneous. When the world was young, men were busied with material needs only, and their time was about equally divided between warring with men as savage as themselves, or in learning the new lesson with its old failures—how they could best hew, dig or build homes out of unadaptable material. Women were helpers, and shared alike in toil and war. As time went on, wars for possession gave way to commerce ; commerce paved the way for literature ; art grew apace ; and out of the rude lullabys with which the half savage mother hushed her young, grew the divine science of music. Navigation reached perfection, and journeying by land became a realization of the fairy tales of childhood.

It is thus crowding, ever crowding, that the old has given way before the clamorous, pushing, insistent New.

These finer forces of thought know no limitation of time, space or substance.

Suggestion, auto-suggestion, hypnotism, alternations of personality, mental healing, faith cure, telepathy, clairvoyance, clairaudience, automatic, and independent writings, independent kinetic energy, psychic photogrophy and thought photography are all milestones that mark the progress along the way. Telepathy clairvoyance and mental photography have each received that burden of proof which assured their tardy acceptance by recognized scientific bodies.

The experiments of Barraduc along the lines of mental or so-called thought photography, which have been accepted by the Academy of Science in Paris, show that the various emotions, as well as the stronger and more vigorous modes of thought, are capable of being and repeatedly have been recorded on the sensitized plate of the photographer.

Clairvoyance has been accepted by the Psychical Research Society after the prolonged study Professor Richard Hodgson has given the subject through the personality of the much investigated Mrs. Piper. Instances of telepathic communication which were formerly regarded as fabrications of the oriental imagination are now to be found in nearly every issue from our teeming Western press.

There are also at the present day persons of recognized standing and ability in other fields of labor, possessed of worldly wisdom sufficient to command the respectful attention of all educated people, who assert a knowledge of persons, places, times and things far beyond the knowledge gained through the exercise of the customary organs of sense, and not to be explained by either education or training. These are persons in sound health ; their business relationship proves them to be of sound mind, and yet precognition, retrocognition and various other uses of the powers of the soul are to them as the use of mental power in the ordinary individual.

Among the best known of some of these persons who are thus experimentally investigating this latent power, would probably be to you the names of Mrs. Annie Besant, a woman of unquestioned ability, or Mr. William Stead, known to all of you as a most practical man of affairs.

When persons, so occupied with pressing practical duties, make or take time to pursue the special line of investigation, it entitles this subject to respectful consideration.

We have all known the very remarkable results of training and education among deaf mutes, and more especially

among the blind. By education and special training they often become self-supporting members of the community, apparently with as little effort as attends many who have unrestricted use of the organs of sense. There are also rarer cases where the deaf hear, the blind see, and the crippled pursue the ordinary avocations of life in a manner far beyond the possibility of explanation by either education or training. A case illustrating this exists at Clairondon, Indiana, where one John Walther, blind from birth, is a most successful farmer and fence builder. He is noted as being a particularly good judge of live stock, and buys horses, cattle, sheep and hogs with discretion. Indeed it is said that he has never been cheated at a trade. He will also go to any part of a large farm unattended, in search of truant cattle, and never fails to find them, though how he manages to distinguish the objects of his search is a question which puzzles everybody, and is a mystery which he makes no effort to explain. He will select his own horse from a dozen others grazing in the pasture. There is no work on the farm which he does not perform satisfactorily, while his fences are laid as quickly and as accurately as by men who see, and who have had special training in that line of work. Toward the close of an article describing him, occurs this sentence: "He knows the difference between friend and stranger even before a word has been spoken, or a foot-fall heard, the intuition present more or less in every human mind being in his case acutely developed."

Some who are present know the case of Mary, or as she is more commonly known, Mollie Fancher, of Brooklyn, a subject of more or less newspaper notoriety. She has been a wretched invalid for over thirty years, the result of two severe falls which occurred in early life. She is sadly crippled, and according to the testimonials of several reputable physicians, among them being Willard Parker of New York and Robert Ormiston of Brooklyn, she has also been blind for many years, owing to the total destruction of the optic nerve; yet in these years she has done an almost incredible amount of fine embroidery, and various kinds of fancy work. For several years her arms were contracted above and back of her head, and while in this position much fine work was done. She carries on a voluminous correspondence, and her knowledge of current literature, and the general news of the day, is above the average.

There is at the present time a mulatto child, Lonnie Lawrence Dennis, five years of age, who is preaching daily in New York to crowded houses. Of him, Carleton Simon, a nerve specialist, has said, "He presents no physical sign of degeneracy," and in proof of his assertion gives weights and measurements in comparison with healthy children. Rev. Geo. Hepburn said of him, "He is in an entirely normal state as far as intelligence and physical being are concerned. His theology is sound, and it is so phenonenal that a child of such tender years should have such knowledge that I cannot but believe that he is inspired."

Various other clergymen who have interviewed this child agree upon the soundness of his religious training, and consider him as well grounded in the tenets and dogmas of orthodox religion as are many of those men who have completed the curriculum of established Theological Seminaries.

I could easily fill more time than you would care to give with reports of well authenticated cases which would illustrate each one of the various phases which I have enumerated, but these are enough to show the purpose of the paper.

Shall we not give more careful attention to diagnosis in such cases as might seem on casual observation to be due to perverted nerve action, or emotional disturbance, and not hastily classify illy understood manifestations, possibly of psychic nature, as hallucinations and hysteria. Is it not possible to improve upon the older methods of treatment which began with assafoetida and valerian, and vary in some degree the forced feeding and massage so commonly employed today?

Genuine conditions do, occasionally, exist which are beyond ordinary experience, are accompanied by uniform phenonena, and are governed by laws yet to be discoved.

It is a matter of history that persons known today as psychics or sensitives, have in the past been hung as witches, stoned as sorcerers and ostracised as outcasts by the laity.

They have also been drugged when not sick, have offered as useless sacrifice organs which were not diseased, and have been imprisoned in luntica asylums when not insane, by the advice of medical men.

A record which would be better broken than continued.

URIC ACID AS A FACTOR IN THE CAUSATION OF BRONCHITIS AND PLEURISY.

By Philip S. Roy, M. D.
Washington, D. C.*

I shall not discuss the various theories as to the causation of acute articular rheumatism, but I believe that many of the acute inflammations of the small and often of the large joints are due to uric acid.

At this time I wish only to express my belief that bronchitis, in many instances, is due to uric acid. This conviction has been forced upon me by observing cases in which other causes could be excluded, and in which a definite relationship could be established between the occurrence of bronchial attacks and the quantity of uric acid and urates found in the urine—usually coincident with the development of the bronchitis, but occasionally only after several days of treatment. Often there is an excess of uric acid in the blood and tissues though the urine be perfectly free.

In most cases of uric acid bronchitis we can also obtain a personal or family history of either muscular or joint attacks due to uric acid. If added to these clinical facts, relief be obtained by giving salicylates, iodides or colchicum, we have I think strong grounds for belief in the

* Read before the Medical Society of the District of Columbia.

correctness of our diagnosis. I do not know how uric acid produces bronchitis and it is not necessary to discuss those metabolic changes which result in the formation of this product; but I believe that a rational explanation of the connection between uric acid and bronchitis can be formulated. Uric acid may act as a direct irritant to the bronchial mucous membranes, or secondarily, by causing arterio-sclerosis, it may seriously affect the nutrition of the parts.

It is probable that the bronchial attacks which occur after years of uric acid excess, are largely due to changes in the blood vessels.

The histories of a number of cases of bronchitis of uric acid origin might be detailed, but I will only mention one which was of special interest to me.

The patient, a woman, 30 years of age, suffered from an inflammation of the joints of the toes and fingers accompanied by stiffness in several of the larger articulations. The urine contained a large excess of uric acid and urates. Three times, during the illness, the inflammatory disturbance of the joints suddenly disappeared and a severe bronchitis accompanied by the usual physical signs began. This would last for two or three days, disappear in its turn, and be succeeded by inflamed and swollen joints. While the bronchitis lasted the joints were not painful and but slightly swollen.

No mention can be found in recent literature of uric acid causing pleurisy, but in a letter received from Dr. Alexander Haig, of London, several weeks ago, he says: " I believe the two chief causes of pleurisy are tubercle and uric acid." Dr. Haig is a careful observer and I was gratified to receive the foregoing statement from him.

I have nearly every year seen cases of pleurisy, with a small amout of effusion, which I have ascribed to uric acid. My reason for this was that, in the cases mentioned, no other cause for the pleurisy could be discovered and the excess of uric acid was the most marked pathological condition present; further because of the well known injurious effects of uric acid upon the blood vessels, producing arterio-sclerosis which is partially an inflammatory process.

According to Tyson, the harmful results of the action of uric acid upon the blood vessels, is due to the high tension it produces. It may be well to mention in this connection that it is not uncommon in old pleuritic adhesions to find that the oxalate, as well as other lime salts, have formed.

These notes have been presented with the hope of stimulating closer clinical observation. The bacteriologist and pathologist can give us more material assistance. I fear we are too apt to hasten after a careless clinical examination to the bacteriologist to ask him what is the matter with our patient.

THE NATIONAL MEDICAL REVIEW,

EDITED BY

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WITH THE CO-OPERATION OF

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AND

THE MILITARY SURGEON,

A SUPPLEMENT.

OFFICE: 1408 Twenty-first Street, N. W.

WASHINGTON, D. C., MAY, 1899.

Notices and Reviews.

ANNUAL ADDRESSES OF THE PRESIDENT OF THE MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA, delivered 1894-95-96-97-98. By Samuel C. Busey, M. D., LL. D., etc. Washington, D. C., 1899, pp. 178.

It does not often fall to the lot of medical men to be called upon to deliver five Presidential Addresses, nor is it an easy task to select suitable topics for such occasions. Dr. Busey is to be congratulated upon both. When in 1894 the Medical Society contemplated the commemoration of its 75th Anniversary it was but natural that one of its oldest and most distinguished members should have been chosen to preside over the Jubilee Meeting and Dr. Busey having already served one term in 1878 was unanimously re-elected to the presidency. With his accession to the office he evidently determined to place the Medical Society upon a higher scientific plane and to make it a factor in the promotion of municipal hygiene in the National Capital. How well he has succeeded in the first instance the published transactions of the Society for the past three years will attest, while the commendable progress in the sanitation of the Capital and the efforts of the medical profession in relation thereto are plainly set forth in his fifth annual address.

Dr. Busey does not claim personal credit for what has been accomplished in these various directions; indeed without the hearty support and co-operation of the members of the Medical Society, many if not all of his efforts would have been fruitless, but he is clearly entitled to the credit of leadership in prosecuting the beneficent work, outlined in his address delivered in December, 1894. On p. 23 he says "For the first time in the history of this great Government, the House of Representatives of the Congress of the United States has through one of its standing committees, invited a medical society to appear, through a committee of its own members, before it to present and explain the report of its investigations into the causes and prevalence of typhoid fever in this District, and the importance and necessity for an increased and improved water-supply and sewerage extension; * * * Never before in the history of this Society has the municipal government sought its advice and counsel in matters of grave importance pertaining to sanitary science, * * * What is the significance of such facts * * Do they not emphasize the power and influence of this Society in this community * * I appeal to you to accept the exhortation I have so often delivered to you—assert yourself, that you may widen the sphere of your usefulness and influence."

Dr. Busey's efforts have not been confined to the promotion of the public welfare alone, and the material interests of the medical profession, have received close attention. This is shown in his annual address of 1895, in which he re-

cites the labors of the Medical Society in relation to the enactment of a law to regulate the practice of medicine and surgery in the District of Columbia to license physicians and surgeons after due examination and to punish persons violating the provisions of the act.

The recent reforms in hospital and dispensary abuses which furnish the theme for his Presidential Address in 1897, were also largely brought about by his clear and fair presentation of the case, whereupon the Medical Association adopted certain rules which will place a limit on the performance of unrequited services, sift charity from its abuse and keep the hospitals and dispensaries from absorbing patients who are able to pay for medical and surgical treatment.

Such a result involving the rights, privilege, honor and dignity of the medical profession could never have been accomplished in the face of a most bitter opposition from the lay members of hospital and dispensary boards without good leadership and the efforts of a united profession.

If Dr. Busey had accomplished nothing more in life than the last two facts he would be entitled to the gratitude of the profession.

Much remains to be done to make the Medical Society what every progressive member would wish it to be, and the task largely rests with the younger members, who should assert their prerogatives in the presentation and discussion of scientific and practical questions, unmindful of adverse and often of unfair criticism. Much could be done also by encouraging the holding of joint meetings with the junior medical societies in this city, in which papers should be read and the discussion opened by members of the respective societies.

NERVOUS AND MENTAL DISEASES. By Archibald Church, M. D. and Frederick Peterson, M. D. Philadelphia. W. B. Saunders. 1899. Price, $5.00, cloth, net. $6.00, half morocco.

It must not be supposed that this volume is the joint work of two writers, for it is really two separate monographs under one cover. The first six hundred pages were written by Dr. Church and treat of nervous diseases. He has divided his work into six parts: examination of patients, diseases of the cerebral meninges and cranial nerves, diseases of the brain proper, diseases of the spinal meninges and spinal nerves, diseases of the cord proper, and finally diseases of the general nervous system with known anatomical basis. It will be readily seen that the book has been written for medical students and general practitioners. The sequence of chapters is logical and complete and facts, not discussions, are given in a clear, concise, and direct way. As the author very properly contends, diagnostic investigation in neurological work is a fine art. A correct opinion depends upon it. It is the first step towards treatment, the legitimate end of medicine. The physician is dealing with morbid conditions revealing themselves for the most part by functional errors. The large subjective side of the problem with the unreliability of the patient's responses, adds to the difficulty and calls for keenness of judgment at every step. Dr. Church warns us that snap-shot diagnoses may be gratifying to all concerned, if correct, but they are very likely to be wrong and prejudicial to a proper subsequent estimation of the case and are never necessary. Whilst the subject of treatment is fully considered in every chapter yet, we believe we do not err, when we say that the author's strong point is the teaching of a correct diagnosis in every case of nervous disease no matter what its origin. Dr. Peterson has thirteen very instructive chapters on mental diseases. In the very beginning he counsels the practitioner who may some day find himself in the witness box not to attempt to define insanity but to say that it is a symptom of so many obscure pathological states, and appears in such divers forms that a narrow definition is not possible. The author's descriptive powers are very great and tend to make his chapters interesting as well as instructive. About the whole work we may say that the literature of neurology and psychiatry has been sifted by the authors and the digest has been revised in the light of their own experience in practice and teaching. They present their facts clearly, directly, and with brevity.

Progress of Medicine.

GENERAL MEDICINE AND SURGERY.

UNDER THE CHARGE OF

EDWIN B. BEHREND, M. D.

Albuminuria in Tuberculosis.

The author distinguishes three forms of nephritis in tubercular subjects. 1. There may be a general nephritis which has nothing to do with tuberculosis. These cases are rare and Bright himself observed that sufferers from Bright's disease seldom have tuberculosis. 2. The second form is "para-tubercular," i. e. it depends on a general injury to the body which tuberculosis has caused (amyloid). 3. The third form is tuberculosis of the kidney itself. Great difficulties are frequently met with in diagnosis. Renal tuberculosis gradually manifests itself through the well known symptoms, blood, pus and tubercle bacilli in the urine. On the other hand interstitial nephritis in tuberculosis is difficult to determine, partly on account of the variability in the character of the urine and partly because other symptoms obscure and overshadow those of the tuberculosis proper. There are two points of importance: gallop rhythm and increased arterial tension. If one or both of these symptoms occur in a weakened constitution, such as is caused by tuberculosis, the suspicion of interstitial nephritis is well founded.. Potain. L'albuminurie chez les tuberculeux. Journ. de méd. et de chir., Apr. 10, 1898.

The Treatment of Bronchial Asthma.

The author has observed many good results from the use of atropin in bronchial asthma. Not only are the attacks themselves favorably influenced by the treatment, but even permanent cures have resulted. The daily dose in the beginning is ½ mg. given internally. Every 2nd or 3rd day the dose is increased ½ mg. until 4 mg. a day are reached. After a while the daily dosage is gradually decreased. The first atropin cure lasts from 4 to 6 weeks. After intervals of half a year the course of treatment is repeated with smaller doses. The large doses are usually well borne, but care must be exercised and the patient carefully watched. It is best to have the patient in a hospital or sanitarium. V. Noorden (C.) Zur Behandlung des Asthma bronchiale. Therap. Monatsh., 1898, No. 10.

A Case of Pancreatic Colic Accompanied by Temporary Diabetes.

The patient was a man, aged 21 years. The attacks of pain were located in the epigastric region and radiated along the left costal border to the spinal column and up to the left shoulder blade. The pain was associated with vomiting but without fever. Gall-stone and renal colic were excluded partly on account of the nature of the attacks and partly because of the urinary analysis. No signs of either of the above-mentioned causes of colic appeared in the urine; but all the symptoms of diabetes mellitus were present. These symptoms were not present before the attacks of colicky pains; but after them. The author concludes that there must exist a close relation between pancreatic colic and diabetes and that the latter must be regarded as a functional disturbance of the pancreas. Polyokoff (W.) Ueber einen Fall von Pankreaskolik von temporären Diabetes begleitet. Berl. klin. Wchnschr., 1898, No. 11.

The Origin and Significance of Eosinophiles in the Tissues and in the Blood.

According to Klein, the presence of eosinophile leucocytes in inflammatory foci or in tissues subject to any morbific influence, is not a symptom of any specific irritation, but the result of extravasation of blood or the imbibition of tissues with modified haemoglobin. These

leucocytes, which owe their origin entirely to the haemoglobin, are not new formations which were not previously present in the body, but represent the ordinary neutrophile leucocytes, which take up extravasated blood corpuscles or haemoglobin, and as a consequence, undergo a change in the nature of their granulations. The foundation of this process is to be sought for in the tissues, and very probably in some cases in inflammatory products. The tissue eosinophilia is not bound down by any especial rule; everywhere where the blood circulates and can extravasate the possibility of the formation of eosinophile cells exists. From the seat of formation these cells may be taken up again by the blood stream and cause an increase in their number. Therefore, eosinphilia is always a secondary phenomenon. In the strictest sense it is not pathological, but a result of a purely physiological function of the neutrophile leucocytes. The eosinophile cells have not the diagnostic value which has hitherto been attributed to them, except in such processes as are associated with blood losses, eosinophilia then directs our attention to these changes. Klein (S.) Die Herkunft und die Bedentung der Eosinophilie der Gewerbe und des Blutes. Centralbl. f. inn. Med. No. v, Feb. 4, 1899.

Intestinal Lithiasis.

Under the above term the author understands those cases in which calculi are formed in the intestines themselves. It is a secondary disease occurring in the course of chronic inflammatory affections of the intestines. The beginning of the disease is indefinite because the chronic inflammatory process occupies the foreground of the clinical picture and the passage of sandy masses is not observed. The suspicion of intestinal lithiasis is aroused whenever grave painful crises occur in the course of a membranous enterocolitis. It may be difficult however to determine the presence of stones, because of their scarcity or fineness. If the latter however attain a considerable size, they cause severe intestinal colic. These attacks begin after a prodromal stage of malaise and general symptoms, vomiting of mucus, blood or bile, vertigo, etc. The duration of the attacks may be a few minutes or even days and cease suddenly on the passage of sand or calculi, mixed with faeces, mucus and blood, only to begin again when constipation occurs. The concretions in the stools consist of sandy masses varying in size from small peas to pigeon or hen's eggs, and consist of phosphates or carbonates in variable quantities. The diagnosis depends on careful and systematic examinations of the faeces whenever, in the course of chronic inflammatory processes in the intestine, attacks of colic occur. In gallstone colic usually a definite time elapses between the attack and passage of the calculus. The radiation of the pain and icterus are also important points. Renal colic differs in the seat of pain and changes in the urine. The course of intestinal lithiasis is a chronic one and shows no spontaneous tendency to cure under proper treatment; the crises frequently cease but not the formation of sand. Prognosis is not grave but the disease is none the less unpleasant and painful. Therapeutically, measures are indicated which relieve the pain, overcome constipation and bring about intestinal asepsis, careful regulation of the diet and especially avoidance of vegetable foods. Chevalier (A.) La lithiase intestinale. Gaz. hebdom. de med. et de chir., 1898, No. 43.

CLINICAL DIAGNOSIS.

UNDER THE CHARGE OF

ANDREW STEWART, A. M., PH. D.

A Trachoma Diplococcus.

Among the debilitated, especially such as have suffered from malaria, there are forms of conjunctivitis accompanied by desquamation of the corneal epithelium, and even severe ulceration, where the most experienced are at fault. Any follicular inflammation of the conjunctiva resisting treatment and persisting for any length of time has been regarded as a form of trachoma, whereas trachoma has in realty a constant cause and a characteristic etiological factor. It is due to a capsulated diplococcus 1½ to 2, microm. long and 5, microm. broad, which is not decolorized by Gram's method. Its septum has an affinity for stains and the organism, therefore, often simulates the appearance of a bacillus. It is found constantly present in the follicles and secretions of trachoma before astringent and antiseptic remedies have been employed. Where there are enlarged follicles one is expressed and its contents used for examination, otherwise the secretions can be employed, though not so satisfactorily. Spread thinly and evenly over four cover slips; fix two for ten minutes in abs. alcohol and two in the flame and submit one of each sort to the Gram method. The other two are stained according to Weigert, using lithium carmine as a counter-stain. The results should coincide. In the latter process the diplococcus is stained deep violet against a bright carmine background.

Snydacker (E. F.)—The microscopical diagnosis of trachoma. Medicine, 1899, V. 295.

Staining the Gonococcus.

To prepare a specimen of urethral discharge for microscopic examination, Valentine (Clinical Record) gives the following directions:

1. Spread the discharge, filament, or sediment as thinly as possible over the cover-glass.

2. Let it dry under a bell-glass, to protect it from dust or air microbes. This usually requires about three minutes.

3. Pass it three times through the opened Bunsen flame, with an even motion, to "fix" it.

4. Drop eosin (saturated solution in alcohol) upon the cover-glass and hold it over the closed Bunsen jet until a slight visible evaporation results.

5. Hold it under a stream of water until all the eosin that can be washed away is carried off. If the cover-glass stood on edge over filter paper gives it ever so slight a tinge, the washing has been insufficient and must be repeated until nothing but clear water comes from the glass.

6. Drop 2 per cent. mythylene-blue upon the glass and let it rest so covered for five minutes.

7. Wash as described under No. 5, and mount for examination.

Rev'd. in Med. Standard, Chicago, 1899, xxii, 94.

The Blood in Asthma.

The author believes that asthma is produced by some dyscrasia of the blood differing in different cases, even in the same patient, as to age and surroundings, and he thinks that no physician should be allowed to prescribe for a case without first procuring a careful analysis of the blood. This is not a hard statement to prove, when one considers the relationship and co-workmanship of the lungs and the blood. It being the function of the lungs to carry oxygen to the blood, and of the blood to take oxygen from the lungs, then, having impaired oxygenation with no pathological condition of the lungs, as has always been proved in asthmatics, where can the pathological state exist if not with the blood?

That the lungs should spasmodically contract and expel a substance that cannot be utilised is only a natural phenom-

enon. This phenomenon is most beautifully illustrated by the stomach.

The most marked and observable pathological conditions of the blood in the production of asthma are the anemic, leukemic and lithemic types. Each of these types is capable of producing asthma, but quite frequently they are joint coadjutants. Then, again, in some cases first one type then another will be the predominant etiological factor. The writer found in looking over a history of 223 cases by Salter, that 129 were described as being thin, pale and emaciated; 44 very stout; 30 healthy looking; 20 not stated. He therefore concludes that out of his 223 cases, 129 or over half were of the anemic variety; 44 of the lithemic and 20 doubtful as to class. His own experience corroborates this record as the majority of his patients, suffering from asthma, had been of the anemic variety. He reports three cases of asthma coming under his personal observation. The first was of the anemic type, which was peculiar in that, so long as the patient pursued such occupations as tended to produce a robust condition of the blood, he enjoyed perfect freedom from the affection. An examination of the blood showed: red corpuscles 80 per cent.; hemog. 40 per cent.; plasmodium malariae—present. It is not probable, from the facts in the case, that this organism figured for more than a few weeks in the history of the case. The second case was asthma due to leukemic blood most probably caused by poor food, unsanitary surroundings and syphilis. Blood examination showed: leucocytes, 1 to 19; red corpuscles, normal; hemoglobin greatly diminished; plasmodium, absent. The sputum showed absence of tub. bac. and Curshmann's spirils; presence of Leydens crystals. The patient was practically cured by greatly depleting the system for 24 hours to drain off the excessive lymph and then instituting a tonic line of treatment with full, nutritious diet.

In the third case the blood examination shows: reds normal; whites normal; alkalinity dim.; plasmodium malariae, absent. The uric acid of the urine was increased. The affection was attributed to a lithemic blood condition. The patient recovered slowly on anti-rheumatic diet and appropriate therapeutic treatment. Jack (Geo. N.) Abnormalities of the blood.—The etiology of asthma. Buffalo Med. J., 1899, xxxviii, 481.

Detection of Mercury in Urine.

The investigator provides himself with (1) a vessel of 1000 cc. capacity, (2) a thin pipette of ½ to ¾ cm. in diameter, (3) an alcohol lamp, (4) sulphuric and acetic acids, (5) gold-foil, and (6) iodin in crystallin form. Five hundred cc. of urine are poured into the vessel, to which 25 to 30 cc. of chemically pure strong sulphuric acid are added, and the vessel shaken; the urine grows dark and the vessel is heated. Then 35 to 40 cc. of chemically pure acetic acid (1 to 12) are added and the vessel shaken. Three meters (?) of the foil are put in the vessel, and left there for twenty-four hours. The foil, before being thrown into the vessel, is coiled around two fingers, in order to expose a large surface when the vessel is shaken. After twenty-four hours, if mercury is present in the urine, the surface of the foil will be coated with mercury in a form of an amalgam. The urine is poured out and the foil is thoroughly washed in water and carefully dried by absorbent paper. The increased weight of the foil will show directly the presence of mercury, or in cases where the amount of mercury is very insignificant, the foil is warmed in a tube with crystallic iodin, and bright-red biniodid will be formed. Vyshemirski, (N. J.,) *Wratch.*, XIX., p. 845; Ref. *Jr. Cut. and G.—U. Dis.*, 1898, xvi, No. 194, p. 551. Rev'd. in The Post Graduate, Jan., 1899.

Estimation of Glucose in Urine by Means of Methylene-blue.

Although urine decolorises methylene-blue, it has no such action if it has been previously strongly diluted. Urine may, therefore, be tested for glucose by adding to 1 cc. of the diluted sample (1:3) 5 cc. of a solution of methylene-blue (1:5000) containing a few drops of aqueous potash. Normal urine remains blue, but diabetic urine is at once decolorised or

turns pale yellow. To render this reaction quantatitive, 30 cc. of methylene-blue solution mixed with 1 cc. of 4.5 per cent. aqueous potash is added drop by drop to 1 cc. of diluted urine, covered with a little xylene and placed in boiling water until there is a permanent blue coloration. The xylene serves to protect the solution from atmospheric oxygen. The sample of urine should not contain more than 0.3 per cent. of glucose. One cc. of 0.1 per cent. solution of glucose requires 6.5 cc. of the reagent. Urea, uric acid, sodium chloride, creatinine, peptones, albumin do not reduce the blue; biliary matters turn it green. Goff (*J. Chem. Soc.*, 1898).

A Convenient Method for Estimating the Agglutinative Activity of the Blood of Sick Persons.

Pfaundler uses the white-cell counter of the Thoma-Zeiss apparatus. First, he prepares an emulsion of typhoid-bacilli by mixing three loopfulls of a twenty-four hour culture of bacilli with a half test-tube full of bouillon. He then draws blood into the mixer up to the mark 1.0 and dilutes with the emulsion up to the mark 11.0. After agitation he blows the contents of the pipette into a sterile test-tube. He now prepares a dilution in which blood is drawn to the mark 0.5 or 0.3, or even 0.1. The test-tubes are then allowed to stand until sedimentation has taken place, or better, they are centrifugated. A drop of serum of each is then examined by the hanging-drop method. As 100-volume parts of blood contain 67.762 parts of serum, the volume of serum is practically equal to two-thirds that of the blood. When the blood is drawn to the mark 0.1 the dilution is 1:150; when to the mark 0.5, it is 1:30 and when to the mark 1.0, it is 1:15. Sedimentation and centrifugation do not disturb the emulsion of the culture. Pfaundler (M.) *Wien. klin. Woch.*, xi, Jahrg., No. 20; Ref. *Phil. Med. Jour.*, ii, No. 3, p. 114. Rev'd. *ibid.*

Diagnosis of Syphilis.

Justus, assistant in Schwimmer's clinic in Budapest, proposed in two papers (Virchow's Archiv, 1895, vol. 140, p. 91; ibid 1897, vol. 148, p. 533) a test for the diagnosis of syphilis depending upon the sharp, sudden fall of the percentage of hemoglobin in the blood of syphilitics immediately following the action of mercury exhibited by inunction, or by subcutaneous or intravenous injection. This decrease, amounting to from 10 per cent to 20 per cent was observed by Justus in over 300 cases, controlled by other cases of disease in non-syphititics. The reaction was observed in all untreated cases of secondary, tertiary or congenital form of the disease, and in 13 out of 16 cases in which only a fresh chancre and inguinal adenitis were present. So-called "latent" cases and those in which the lesions had passed their acme and were sudsiding, spontaneously or under treatment. did not react. The three cases out of the 16 described came under this last head. It is, therefore, in florid cases with advancing lesions (including relapses) that the reaction is positive. The characteristic, sharp fall in the hemoglobin usually follows each of the first three or four doses (1 to 6 mg. $HgCl_2$ diluted 1,000 to 3,000 times) given subcutaneously or intravenously, while it occurs after the first inunction only. Mercury given by the month does not apparently affect the blood. Cabot and Mertin employed the test at the Mass. Gen'l. Hospital on 7 cases of undoubted syphilis, 4 doubtful and 33 (control) cases of other diseases. Blood examinations were made just before inunction with from 15 to 40 grains unguentum hydrargyri and again 24 hours after. A change of less than 10 per cent in the hemoglobin was not counted a positive reaction. All the syphilitic cases reacted strongly and characteristically (losing an average of 21 per cent of hemoglobin) and in the 33 other cases but one (chlorosis) was positive losing 13 per cent. Cabot (R. C.) and Mertins (P. S.)—Justus' test for the diagnosis of syphilis. Boston Med. and Surg. J., 1899, cxl, 323.

Therapeutic Notes.

Diphtheria, Desperate—Tracheotomy Refused—Blood Cured.

We have long been waiting for a second extreme case of Diphtheria, like the one of which such a signal cure was reported in "Modern Medical Science" for February, 1897, to fall under the Blood Treatment at Sound View Hospital. That second case is here reported. Its extreme character speaks for itself, and so does the treatment, in its definite physiological processes and results—identical with those of the former case. As in the desperate ovarian cases heretofore reported, this case was past saving, even in the judgment of Dr. Biggs himself, by any recognized means but the last resort to surgery, and nothing but the positive rejection of tracheotomy by the parents threw the physicians back upon the hitherto novel resort to the simple but triumphant blood treatment. It may be long before anything less than such compulsion will cause physicians to throw themselves on blood treatment in diphtheria, and that only in the last desperate resort, as in this case. Still, we have not a shadow of doubt that they had better not wait for the desperate stage, but at once add to their armamentarium means so effective all round by their very nature, and so simple and intelligible to every mind.—Editor "Modern Medical Science."

Kate H—, Glenbrook, Conn.; age 12; American.—Was called in consultation, Dec. 12, 1898, by Dr. B—: a well defined case of diphtheria (malignant). An inspection of fauces revealed them red and swollen and covered with diphtheritic exudation; tonsils and uvula were also spotted. Removal of a portion of the false membrane revealed the tissues badly ulcerated; breath was foully offensive; lymphatic gland of neck tremendously enlarged and greatly tumefied; membrane had extended into the nasal cavities, also to the larynx; pronounced obstructive dyspnœa; the breathing noisy and stridulous. Urine contained a little over one per cent. albumen. I advised immediate tracheotomy, believing it the only chance the child had. This was refused me. I therefore determined to try the bovinine-peroxide treatment. December 26, just two weeks later the patient was discharged, cured.

Hay Fever.

It is generally agreed that the treatment of hay fever resolves itself into: 1. restoring tone to a hypersensitive and disordered nervous system, and 2. relieving the distressing symptoms referable to the naso-pharynx. This last may be accomplished, so the leading specialists everywhere say, by spraying the throat and nose with Firnol Compound, a safe, sure, and speedy remedy.

When Pain is Dominant.

"A number of years ago, in a conversation with my old friend, Professor Stucky, of Louisville, he told me that he used far less morphine now than formerly and that he was able to combat the factor of pain as successfully in the majority of cases without it as he did with it. He urged me to give antikamnia to my patients who had neuralgia, lagrippe, rheumatism, locomotor ataxia and dysmenorrhœa, instead of using morphine. I acted on his suggestion and have been able to relieve this class of patients as effectively and without producing the evils that result from the exhibition of opium or its alkaloids. Antikamnia possesses anodyne, antipyretic and analgesic virtues and has been thoroughly tried by able therapeutists. Prof. Shoemaker, of Philadelphia, has found it very valuable in rheumatism, migraine or neuralgic headache and many other nervous affections."

Therapy as Applied to Hydrocyanate of Iron (Tilden's).

There is scarcely a writer of prominence to-day upon the treatment of Epilepsy and the neuroses who does not lay great stress upon the importance of judicious and prolonged treatment of the primary manifestations of an almost infinite variety of nervous affections, with the view of preventing the constant development of still graver diseases. Let us briefly consider in this connection the

therapeutical application of Hydrocyanate of Iron (Tilden's) in the treatment of epilepsy and the neuroses. Hydrocyanate of Iron (Tilden's) is a pharmaceutical preparation of standard medical properties, and like many similar preparations of the ferruginous type, it is capable of subserving quite a number of indications, though its pre-eminent value and therapeutic application is most predominantly exhibited in the treatment of epilepsy. Hydrocyanate of Iron (Tilden's) has long since passed the milestone of experimental research, for its therapeutic utility and application as a standard neurotic remedy has been fully established. Hydrocyanate of Iron (Tilden's) does not contain opium, or alkaloids of that drug: cocaine, chloral hydrate or conium. Its employment as a remedial agent in epilepsy and the class of neuroses is unexcelled The results following its use are most gratifying in epilepsy, hysteria, chorea, neurasthenia, locomotor ataxia, neuralgia, and mania, superintroduced by uterine congestion and suppressed menstruation: migraine, and all convulsive and reflex neuroses, dependent upon the impairment in the functions of the brain and spinal cord. Hydrocyanate of Iron (Tilden's) is also successfully employed in functional nervous diseases, that is, diseases affecting directly the nerves, without any appreciable change of nerve structure. Its action in these cases is remarkably efficient.

Sanmetto and Imitations.

I have used Sanmetto extensively for the last five or six years in both old and young, male and female, in all forms of irritation of the urinary organs, from nocturnal enuresis in the young to cystitis in the aged, and have been disappointed in but few cases in obtaining good results. Have tried imitations (owing to their cheapness), the results were unsatisfactory. Have returned to the use of Sanmetto as a sheet anchor in both acute and chronic conditions of the urinary tract. I obtain speedier and more satisfactory results when given four times a day in drachm doses in hot water.

T. B. Gullefer, M. D., Coroner.
Greensburg, Ind.

Chronic Respiratory Affections.

In a clinical report on heroin published in the Medical Times and Register, March 1899, Dr. Charles J. Lang, of Washington, states that the chief field of usefulness of this new remedy will be found to lay in chronic conditions of the respiratory tract. He has obtained decided benefit from its exhibition in chronic bronchial and pharyngeal catarrhs. Its effects are manifested in from one-half to one hour, the cough being notably lessened in frequency, and expectoration rendered much less difficult, the smaller bronchi being more made readily and freely emptied. In incipient phthisis it proved of much service, and had a tendency, where there was a daily rise of temperature, to produce a reduction of from 0.5 to 1°. The author advises that in cases where alcoholic stimulants are administered, they should be given at least one-half hour before the heroin, or not sooner than three hours afterwards. He also points out that while the therapeutic action of heroin resembles that of codeine, its toxic action is much less than that of the latter while its dose is considerably smaller, so that in medicinal doses it may be said to be absolutely devoid of toxicity.

One of the Oldest Antiseptics, but One of the Best.

There are thousands of physicians, yes, tens of thousands, we doubt not, who can say with "Doctor," in "An Interview," "Why, I absolutely depend upon Listerine in most of my throat work, and find it of inestimable value in my typhoid cases (as many a poor soldier boy can testify), and there are a number of purposes I put it to in the sick room, where nothing can take its place, notably, as a douche, mouth-wash, and in sponging my fever patients. Furthermore, I always deem it my duty to see that my patients get exactly what I order for them, therefore, I always order an original package, thus avoiding all substitutes. That is just where my views upon professional attitude and sound business policy consolidate into one joint effort for the patient's benefit, and incidentally, my own."

Like every other good thing, Listerine

has been counterfeited, as many a physician has found to his regret, none of the "just as good and cheaper" preparations approaching it for trustworthy antiseptic service.—Mass. Medical Journal.

Hydrochloric Acid and Maltine.

Dr. L. E. Schell, Assistant to Chair of Physiology, Detroit College of Medicines, and Surgeon to the Polyclinic, Harper Hospital, Detroit, Mich., speaks highly of the diastasic properties of Maltine. Clinically he finds that the efficacy of the diastase is neither retarded nor impaired by the addition of an acid. One of his favorite prescriptions in certain indications is HCl in combination with Maltine.

Working Tools of the Craft.

After a series of careful clinical experiments with various remedies of a certain character the doctor comes to the deliberate conclusion that one particular preparation gives him the best therapeutic results and that it will hereafter become one of his trusted "working tools." Take for instance Pepto-Mangan "Gude," the value of which almost every modern practitioner is now familiar with. The physician has learned from experience just what this particular remedy will accomplish; he knows its advantages, limitations, indications and dosage, and prescribes it in properly selected cases, with full confidence in its action and effects. Just here, however, the physician loses control of his "working tool" unless he is positively certain that his prescription will be filled exactly as specified. It is, of course, manifestly impossible for the busy physician to personally follow up every prescription in order to assure himself that some inferior and more or less worthless substitute is not dispensed in place of the article prescribed, and he must therefore adopt some other means to prevent this reprehensible practice. There are three ways in which the physician can protect himself and his patient against this unwarranted, inexcusable, and dishonest interference: (1) Let him be certain that his prescriptions are filled only by pharmacists known to him to be above such disreputable catchpenny practices. (2) Specify plainly and unmistakably the particular preparation desired. (3) When possible order an original unbroken package. Editorial in Dominion Medical Monthly.

Vin Mariani in Exhaustion.

We have had occasion in numerous instances to administer "Vin Mariani" to business and professional men who complained of being gradually run down. The work of the office, the cares and worry entailed by business and the physical flaccidity brought on by overwork, all seemed to give way completely in a marvelous short space of time, despite the fact that the subjects continued uninterruptedly at their usual occupations. The notable fact to be observed is that in each instance the effect was permanent. But it must not be forgotten that, in order to make this result a lasting one, it is necessary to keep the patient upon a prolouged course in the use of "Vin Mariani." There is no doubt whatever that this preperatian has proven itself a boon to mankind.—*The St. Louis Medical aud Surgical Journal*, March, 1899.

Grateful Testimony.

IMPERIAL GRANUM CO.,
NEW HAVEN, CONN.

DEAR SIRS—I feel assured you have the best food preparation on the market. I had a son—a soldier—come home low with typhoid fever. I used the Imperial Granum and it acted like a charm. He is now well.

It allays inflammation, reduces fever, quiets the patient and is a great blessing. I wish you a happy Christmas.

—— ——M. D.

Newport, Dec. 16, 1898.

TRANSACTIONS OF THE MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA.

EDITING COMMITTEE:

GEO. M. KOBER, M. D., JAS. D. MORGAN, M. D., LLEWELLYN ELIOT, M. D.

STATED MEETING OF JANUARY 2, 1899. Dr. C. W. RICHARDSON, Vice-President, in the Chair.

The minutes of the stated meeting of July 4, 1898, were read and approved.

The recording secretary said that he had omitted to bring the applications for membership, whereupon Dr. Smith moved that when the Society adjourned tonight it would be to take a recess until 8 p. m. Wednesday, January 11th. Carried.

The Treasurer submitted his report for 1898, of which the following is a recapitulation:

Loan at 6 per cent. int.	$1,000.00
Balance Jan'y, 1898	989.02
Initiation fees	144.00
Interest from all sources	81.22
Assessments collected	1096.00
Total	$3,310.24
Expended	1,345.84
Balance	$1,964.40
Collections from members in 1898	$1,321.22
Assessments due from members, 1897	156.00
Assessments due from members, 1898	636.00

Members removed from city, 5; members resigned, 1; members deceased, 6.

Present membership, 288.

Drs. Cook and Bowen were appointed a committee to audit the treasurer's accounts and reported that they were correct.

The following officers were elected for 1899:

President, Samuel C. Busey; Vice Presidents, George N. Acker, Z. T. Sowers; Corresponding Secretary, Thos. C. Smith; Recording Secretary, F. P. Morgan; Treasurer, C. W. Franzoni; Librarian, Edwin L. Morgan; Board of Censors, C. H. A. Kleinschmidt; S. S. Adams, G. W. Cook, C. W. Richardson and W. B. French.

An assessment of $4.00 annual dues, was levied.

Dr. Smith moved that the salary of the recording secretary be fixed at $200 per annum, and that the services of the assistant recording secretary be dispensed with. The Society took a recess until 8 p. m. Jan. 11th.

Adjourned stated meeting of the Medical Society of the District of Columbia. January 11th, 1899.

Dr. G. N. ACKER, Vice President in the Chair.

Applications for membership were read from the following: William Gerry Morgan, M. D., J. Preston Miller, M. D., Ernest W. Fowler, M. D., John B. Mullins, M. D., B. L. Hardin, M. D., Charles E. Fergerson, M. D., Wilson P. Malvin, M. D.

The treasurer reported the following as being in arrears for two years: Drs. Walter D. Cannon, Mabel Cornish, H. M. Deeble, William May, Edwin Gladmon, Theodore Hansmann, C. V. Petteys, E. M. Schaeffer, and J. Foster Scott.

The treasurer presented a letter from Dr. Hansmann, tendering his resignation from the Society, which, however, could not be accepted except by special authority as he was in arrears for two years. The treasurer explained that Dr. Hansmann had always paid his dues and his delinquency was owing to his inability to raise the money.

Dr. Prentiss moved that Dr. Hansmann's dues be remitted and his resignation be accepted. Carried.

Dr. S. S. Adams moved that those members whose names were read and who are absent from the District be not dropped at present for non-payment of dues. Carried.

The following members were dropped for non-payment of dues: Drs. Walter D. Cannon, Mabel Cornish, H. M. Deeble, C. V. Petteys, and E. M. Schaeffer.

MEETING OF JANUARY 11, 1898.

Dr. ACKER, Vice President, in the Chair.

Dr. E. C. Carter, U.S.A., was nominated as a member by invitation by Drs. A. F. A. King and S. S. Adams.

The resignation of Dr. Magruder as a delegate to the National Pure Food and Drug Congress was accepted and the Chair appointed Dr. McArdle, to serve in his place.

Dr. Kober nominated Dr. Busey, as Vice President of the Washington Academy of Sciences, to represent this society. Carried.

Dr. D. S. Lamb presented the following pathological specimens illustrating lesions in typhoid fever:

1. Specimen of lower end of ileum with cæcum and vermiform appendix: typhoid ulceration of Peyer's patches and solitary follicles with superficial ulcers of cæcum.— From a mulatto woman, age about 30, who was admitted to Freedman's hospital June 15, 1898 and died next day. The post mortem examination showed the intestine as described; cloudy swelling of liver; large darkly congested soft spleen; cloudy swelling of kidneys; oedema and some congestion in right lung. The woman was menstruating at time of death.

2. Specimen of lower end of ileum, etc., showing typhoid thickening and ulceration of Peyer's patches and solitary follicles.— From a mulatto woman age 22, who was admitted to Freedman's hospital Dec. 8, 1898, and died on the 11th. Was taken sick Dec. 1st with chill and fever, vertigo, anorexia and weakness. Another chill on the 7th. There was much albumin in the urine when she was admitted. The temperature ranged from 102 to 106; pulse 118 to 140; respirations 28 to 40. The day before death she had frequent tonic convulsions, followed by stupor. The p. m. examination showed the typhoid lesions in the lower five feet of the ileum, the large intestine apparently normal. Mesenteric glands enlarged and reddened. A recent invagination in jejunum. Spleem large, much congested, rather firm; there were old thickenings of capsule, and adhesions to diaphragm. Liver congested. Kidneys pale, cloudy; some congestion. Right lung much congested, some pneumonia in lower lobe, no pleurisy. As in the first case there was a little blood in the uterus and a recent corpus luteum in one ovary.

3. *Specimen of lower ileum, etc., showing typhoid ulceration and sloughing of Peyer's patches, some of the ulcers undermining; several small ulcers of caecum.*—From a boy 10 years old who died at Children's hospital June 18, 1898. In the service of Dr. Adams. I made the p. m. examination; the intestine was as described; spleen large and soft; liver and kidneys cloudy; lungs congested.

4. *Specimen consisting of a number of ticks (the Ixodis bovis)* male and female with some of their eggs; the male is smaller than the female. This insect belongs to the order Acarina or Acaridae, of the class Arachnidae; an Arthropode. It has four pair of legs, each with six joints, inserted directly in the integument; also a rostrum composed of a pair of mandibles, a pair of maxillae with palpi, a pair of chelicerae or hooklets and a dart. It fixes itself in the skin by the hooklets, pierces the skin with its dart, and sucks the blood. In some way not understood it conveys to cattle the fever known as Southern cattle fever or Texas fever. The specimen was presented to the Army Medical Museum by the U. S. College of Veterinary Surgeons of this city.

DISCUSSION.

Dr. Prentiss said: From the gravity of the lesions as shown in the specimen No. 3 this child would probably have died even had the lung complication not occurred. He asked Dr. Adams if the lung congestion came on during the employment of the cold baths.

Dr. Adams replied in the affirmative.

Dr. Prentiss suggested a possible connection between the cold baths and the lung congestion. Dr. Osler speaks of the terror, shock, and blueness of patients treated by tubbing and while advocating it in hospital practice says its use is impracticable in private practice.

Dr. Prentiss agreed with this view and considered frequent sponging a preferable method of reducing temperature in private practice.

Dr. Kober: The discovery of the parasite in the tick, which causes Texas cattle fever belongs to Dr. Theobald Smith, formerly of our city. The parasite is interesting as the disease which it conveys extends over a large territory—in the far South West.

I became aware of its ravages last Summer. On account of an unusual drought, the quarantine district in southern California was extended, and the cattle were allowed to roam farther north and east in the State. In three months the cattle trails were infected with the ticks and the disease spread rapidly from herd to herd. The disease abates upon the advent of cold weather—about November 1st. Recently the Agricultural Department has recommended a dip composed of sulphur and dynamo oil. The cattle are made to wade through it and the ticks which convey the infection are killed.

Dr. Prentiss asked Dr. Lamb the symptoms of the Texas Cattle Fever, and the nature of the tick.

Dr. Lamb replying to Dr. Prentiss' question, said: The most prominent symptoms are anorexia, fever, increased rate of respiration, salivation, bloody diarrhœa, emaciation, weakness, and death in a few days. The mortality averages 40—90 per cent. The post-mortem appearances are hemorrhages into the subserous, and sub-mucous coats of the stomach and intestines, and congestion of the viscera; the blood is of a reddish-brown color.

Dr. Prentiss: Dr. Smith told me, when he was investigating this subject that he had found a parasite in the blood of cattle suffering from this fever.

Dr. Kober: The affection is a parasitic and destructive disease of the blood corpuscles. The organism I believe belongs to the protozoa and is conveyed by the Texas tick.

Dr. Motter: Prof. Koch has recently likened the infection of man with the malarial parasite through the medium of the mosquito, to the mode of infection

of cattle with Texas fever, through the medium of this tick.

Dr. Kober: We did not have to wait for Prof. Koch to give us this information. Many years ago Dr. King emphasized the theory that the mosquito is a medium for the infection of man by the malarial parasite.

CASE OF PAROXYSMAL SNEEZING, EXTRA-ORDINARILY FREQUENT AND LONG-CONTINUED.

By Walter A. Wells, M. D.

The case that I am about to report is already familiar to some members of this Society. This I mention as a circumstance which you ought to consider fortunate in connection with an extra-ordinary case since thereby you are protected on the one hand from error of exaggeration and supplied on the other with available means of substantiation.

At the very commencement of the attack the case was brought to the attention of the Clinical Society by Drs. Barton and Lewis Johnson, and again one month later by myself at a time when considerable amelioration had been secured although the sneezing had not completely ceased.

As since then the clinical history has been rounded with a cure and that long enough ago now to be regarded as permanent, I think the case sufficiently remarkable to be brought to the notice of the Society and of such interest and importance as to merit a detailed account.

The family history presents nothing striking. There are perhaps evidences of a neurotic taint, the mother for example being a sufferer from severe periodical attacks of migraine.

The patient is a girl of 17, physically developed and of more than ordinary intellectual acumen; she has had no other illness than pneumonia and was even freer from sneezing than most persons it is claimed up to the beginning of the present attack.

The appearance and behavior of the patient was such as to warrant the suspicion of hysteria, as for instance the inclination to attract attention and sympathy and especially in the evident influence they had over the paroxysms.

But in order to determine definitely the presence of hysteria, a careful examination was made for me by Dr. Edwin Behrend with the result of eliciting the following hysterical stigmata (1) concentric narrowing of the visual field (2) points of tenderness along the spinal column and over the supra-sternal notch (3) pain upon pressure in the ovarian region (4) hypalgesia very marked in the left forearm.

In addition there was past history of temporary loss of voice and of severe occipital headaches.

The patient was ambitious at school and had been applying herself with considerable zeal to her studies. Outside of this nothing in particular is to be remarked of the time just preceding the beginning of the attack which was in the latter part of the month of September. The trouble began with what seemed to be an ordinary cold in the head.

For a couple of weeks she sneezed moderately, the paroxysms being a little worse at times as for instance, when she changed from one room to another at school especially when she entered one of the laboratories.

On the morning of October 7, she awoke early sneezing more frequently than yet before. She went nevertheless

to school, where it soon became painfully evident however that she could not remain, for the incessant sneezing not only embarassed her own studies but completely demoralized the rest of the school.

That the interest taken in our patient was greater than that in their studies is shown by the fact that her schoolmates amused themselves in keeping account of the number of the sneezes that occurred within certain time. As these records have been preserved, I am able to present them here as follows:

8.45 to 8.50, 5 minutes, 195 sneezes; 9.05 to 9.10, 5 minutes, 201 sneezes; 9.30 to 9.35, 5 minutes, 214 sneezes; 9.45 to 9.49;2, 4 minutes, 2 sec. 300 sneezes; 10.00 to 10.05, 5 minutes, 328 sneezes.

Thus it will be seen that during the paroxysm she sneezed at the rate of from 40 to 75 times a minute and for five minutes continually, oftener than once a second. The number counted from 8.45 to 10.05 one hour and twenty minutes aggregated 1,238, though this in reality does not represent the whole number of sneezes. On leaving school, the patient applied for relief at a drug store, where she was given some kind of snuff which made the paroxysm still worse. Medical assistance was then had. In the course of that day, and the following day the patient was seen by Drs. Barton, Lee Cole, Lewis Johnson, and Walters and Reeves. I am indebted to Dr. Barton, physician in charge of the case, for interesting data covering this period. Enormous quantities of sedative and antispasmodic remedies were given with almost no effect. During twenty-four hours, the patient received according to Dr. Barton ¾ grain morphine, 400 grains bromide of potash, 150 grains of asafœdita besides large doses of byoscyamus and valerianate of ammonia. Chloroform was administered October 7th, and the following day, ether.

The chloroform which was not carried however to the point of narcosis, was without effect over the sneezing. Under complete narcosis from ether the sneezing ceased, to return again though as soon as she recovered consciousness. The local application of cocaine was tried and had the effect of only increasing the paroxysms. The sneezing for several days showed no abatement; the patient obtained but little sleep, and even during her sleep, according to her family the sneezing continued. The condition became alarming. Dr. Barton made a calculation of the number of sneezes for one of the worst days at this time and estimated that in twenty-four hours the number was not less than 40,000.

In a few days without a cause, that could be definitely assigned, the patient came in a measure to improve. There were now longer intervals of immunity, but there still occurred some spells of rapid sneezing as the following observations show.

October 11th, in 5 minutes, 336; October 14th, in 5 minutes, 300; October 15th, in 4 minutes and 35 seconds, 500. October 16th, the patient had so greatly improved that a trip in the country was decided upon as probably beneficial. During her stay there of several days, the sneezing continued in a mild degree but not enough to be troublesome.

At once upon her return to town the paroxysms became as violent as ever. November 1st, the patient, at the instance of Dr. Barton, came for the first time under my observation. The spec-

tacle she presented at my office was a pitiable one, the throat was sore and her physical strength had become so reduced from the continual sneezing that resistance was less possible than before. The rate of sneezing was at least 1,000 per hour; there were paroxysms of five to ten quick sneezes with rests lasting generally only ¼ to ½ minute. I noticed however by fixing the attention of the patient, the intervals could be a little prolonged. Examining the nose, I found that there existed a marked hyperæsthesia of the mucous membrane chiefly on the right side, together with general hypertrophy. The right nasal fossa was completely obstructed by hypertrophied inferior and middle turbinateds and on both sides the middle turbinated were pressed hard against the septum. Cocaine 5 per cent and Eucaine 5 per cent were applied to the nose by spray, and by cotton swab. These applications instead of mitigating, had the effect of so markedly increasing the intensity and frequency of the paroxysms, from the exhausting effect of which the patient was suffering, that I determined upon immediate operation under general anesthesia. The patient was given chloroform and with the electric cautery knife I attacked the inferior and middle turbinateds on the right side. There was some improvement in the next few days, though not great. It was sufficient however to encourage me to continue the treatment directed to the nose, which could not be expected to bring about immediate cessation of the sneezing until it was complete and all reaction from the operation had subsided. I applied sometimes the electric and sometimes the chemical cautery, at various times until I had succeeded in completely reducing the hypertrophies upon both sides.

The following counts were made during this period. November 3rd, 3 minutes, 185; 12th, 5 minutes, 200; 18th, 2 minutes, 71; 23rd, 10 minutes, 198; 29th, 12 minutes, 195.

There were longer intervals of freedom from sneezing and the patient was enabled to rest better at night. November 12th, for instance she slept through the whole night and sneezed but very few times in the succeeding morning.

By the first part of December the sneezing was but insignificant. December 4th, 5 minutes, 29; 8th, 6 minutes, 36; 10th, 10 minutes, 5. December 10th, was the last day the patient sneezed. Since then her days as well as nights have been free from this, her most terrible symptom. I must speak of the influence that could be obtained by suggestion in this case. I have already referred to the fact that by keeping the patient's attention away from the sneezing, I could succeed in prolonging the intervals between the attacks. Threats of a painful operation and actual painful operations so far as I could see had no effect, but the sneezing always became worse at the time of my visit, or if a little lull had taken place it became worse immediately the subject of sneezing was introduced. By a simple procedure, the success of which was I think due solely to suggestion, I could for a time bring about a complete cessation in the sneezing. This was no other than holding an application in the nose containing an indifferent substance upon cotton. I had suggested that it was impossible for sneezing to take place while it was so held. I could not however make the suggestion a lasting one, by any device or method I knew how to employ. The sneezing only ceased permanently, when the hypertrophies had

been overcome and the mucous membrane recovered all the effect of inflammatory reaction.

In connection with the study of this case, I have taken occasion to review the literature of sneezing and so far as I have been able to ascertain from the ample material furnished by the Surgeon-General's library, no case has been recorded which equals the one just cited in the persistent frequent succession of sneezing paroxysms. Charcot related in one of his lectures (authority of Brisard 'eterneument, Lyon, 1896) the case of a patient who sneezed at intervals 30 to 40 times a minute and who in 23 days he estimated to have sneezed 16, 195 times; and Mosler (Arch. f. path. Anat., etc., Berlin, 1858, XIV, 557) has given the account of a still more remarkable patient who sneezed 50,000 times in three days.

A number of other cases of paroxysmal sneezing of greater severity have been recorded, having various alleged causes, and relieved by no less various measures. In a large proportion some abnormal conditions in the mucous membrane of the nasal fossa has been discovered, treatment of which has lead to the recovery of the patient. Such cases have been published by Barateux, Sommerbrodt, Hack, Schaffer, Schmiegelow, Solis Cohen and others.

In most of the cases reported, there has been observed to be present some kind of underlying neuropathic state, referred to sometimes as mere nervous temperament at others as hysteria or neurasthenia.

The neuropathis state is illustrated, by the influence certain emotional states or unusual circumstance had, very often in causing or modifying the paroxysms. Some curious instances have been known; for example the case related by Ringer and Murrell (Brit. Med. Jour. 1888, i 1257; 1321) of a man who had the unfortunate habit of being obliged to sneeze whenever he came in the proximity of horses. One evening while at the theatre, sitting quietly and intent upon the play, a feeling of oppression came suddenly upon him with incontrollable desire to sneeze. As there did not appear to be present the usual exciting cause he was unable to account for it. In a few minutes however, a horse galloped upon the stage, upon which he began to sneeze at such a rate he was compelled to leave the theatre.

The same authors mention also incidences of individuals in whom cats incite sternutatory manifestations and of others, who are seized with paroxysms of sneezing, accompanied by shortness of the breath, and itching about the eyes whenever they came in contact with the hairy caterpillars. Some authors have recognized the co-existence of a local disease with the general diathetic state, while some have found the former only. The local trouble has not been always the nose. It is a well known fact that rays of light falling upon the retina have the effect of causing certain individuals to sneeze and Bouchut (Paris med. 1880, 2, s. v, 641) cites a case in which sneezing paroxysms were induced by irritation arising in the intestines. The question of the relative parts played in the causation by the local and the general condition is one of something more than theoretical value. There are some who when confronted by a case like this upon the slighest excuse cry hysteria, and go no farther. They ignore even the possibility of local trouble or if such be recognized they do not admit its causative relation to the symptoms, but are content with treatment of the general health.

But there have been cases recorded (Memphis Jour. Med. S. C. 1889, i) which have not recovered after a plentiful administration of bromide, valerium and like sedative or anti-hysterical remedies. What then?

Lennox Browne has published an instructive case of paroxysmal sneezing, which illustrates the importance of carefully seeking the local source of the trouble. The patient had suffered for four years, with sneezing paroxysms of a dozen or more occurring two or three times each day.

She had been treated by one physician for neuralgia, by another for dyspepsia and by a third for nervous debility, although according to Browne there was no ground for a diagnosis for any of these three affections. Examination of nose and throat disclosed hypertrophied, turbinateds and adenoids, and as soon as these conditions were relieved the sneezing came to an end.

"Physicians now" writes the author drawing a lesson from the case, "have ceased I believe to charge the throat specialist with failing to examine the patient's lungs or other distant organs. It must be to the advantage of the patient, at least to their own credit, if in such cases as this the general physician would examine into local sources before giving a diagnosis of generalization."

It is my contention, that in all nasal reflex neuroses, of which the case here related is an illustration, it is not merely possible but essential to have united both the local and general trouble, the latter the predisposing, the former the exciting, factor in the production of the manifestation.

Our patient had she only had hypertrophied turbinateds, would have been like plenty other persons with the trouble who seldom or never sneeze or, had she only hysteria, why should she have more inclination to sneeze than others who have this malady? but having both, an explanation is at hand.

I shall not enter into the discussion of the nature of the constitutional diathesis, a subject I have had occasion to treat in some published articles. Suffice it to say that it consists, as I believe in a certain over excitability and consequent instability of the sympathetic ganglia, rendering them susceptible to a stimulation which in ordinary health would make no impression. But the admission of the existence of a central disturbance detracts none from the importance of the local disease; for it is primarily to the latter, we believe that remedial measures should be addressed in bringing about a cure of the disease. We know that remedies aimed to correct a general diathetic state are most uncertain and every physician recognizes the necessity of centering the attention upon a certain focus as it were, even for those patients whose malady is general. If it be thought that suggestion plays an important rôle in the cure, then he that employs local measures makes no mistake, since he thus adopts one of the most succcessful means of making use of suggestion. At any rate if we discover an abnormality of any kind is it not our duty as well as our province to remedy it, and if that be true, with how much greater reason then, if a causative relation may be inferred between it and the symptoms present.

Surely an imperative indication for the treatment of the local condition arises out of the consideration of its influence upon the general nervous system, and thus perhaps that neuropathic state of which so much is said may owe its existence in part at least to the local trouble.

It is not unphysiological, we think, to assume that unstable centers should become more unstable by constant irritation of peripheral origin, and that a reflex path often traveled should be thus rendered more accessible for the conveyance of stimuli. Without then denying the advantage of all general measures in cases like this, the first aim we think should be directed to the removal of tangible local trouble.

DISCUSSION.

Dr. I. S. Stone said: I recollect a similar case which occurred in my own practice some two years ago. The patient was a girl, sixteen years old, precocious and well developed, who menstruated first at 13 years of age.

The paroxysms of sneezing in this case had continued for two years, and ceased and spasm of the abdominal muscles continued for another year. She had been treated for a neurosis of the spine, and for various other diseases. She had a chronic nasal catarrh, cystic ovaries, and retroflexion of the uterus. A gynaecologist was about to operate upon her, when she came to my sanitarium.

The paroxysms ceased during sleep—a characteristic of hysterical sneezing. The action of the muscles in producing sneezing in these cases is on the same order as the spasmodic contraction of the eyelids, the twitching of the corners of the mouth, so often seen.

I had many and varied opinions from eminent physicians regarding this case, but a cure was finally brought about by regarding the affection a neurosis and by the use of suggestion. All such cases are impressionable and no local treatment alone suffices to cure. I made a mock operation on this patient under anaesthesia, and instructed her not to sneeze, lest she cause the stitches in the abdominal wound to tear out. This kept off the paroxysms for 48 hours, when the sudden appearance of a friend started them again. The nurse quieted her, however, and she has had none since. The cure in this case was, I believe, brought about as a result of mental impression.

Dr. Prentiss said: This was evidently a case of hysterical sneezing, the nasal trouble being secondary. So much sneezing would soon give rise to nasal inflammation. Dr. Wells is right however in saying that the general practitioner should not regard constitutional symptoms alone; the specialists advice is most valuable in these cases. The results of the treatment in this case were most happy. Hysteria was the primary trouble but the nasal condition acted to keep up paroxysms, and had to be relieved. Is the evidence positive that this girl sneezed during sleep? It is a characteristic of affections of this kind that sleep is usually undisturbed. I have noted the same thing in the Chorea of Pregnancy.

Dr. Wells, in closing the discussion stated, in answer to Dr. Prentiss' question, that he himself doubted the correctness of the statement, made by a member of the family, that the patient sneezed during sleep.

As to the causation, he understood that the patient was suffering from a "cold" when the paroxysms commenced—hence the nasal trouble may not have been secondary to the hysterical condition.

Meeting of January 18, 1899.

Dr. Geo. N. Acker, Vice President in the Chair.

Dr. T. C. Smith moved that the Society authorize the printing of 500 copies of a list of members of the Society. Carried.

A letter from Dr. Wells, with a statement by a reporter was read explaining the appearance in a morning paper, of a part of his paper read Jan. 11th, 1899.

Dr. Adams moved that Dr. Wells' explanation be accepted, and the letter filed. Carried.

The following resolution from Dr. Busey was read, and passed by the Society. Whereas: It is represented to the Medical Society of the District of Columbia that the code of the laws of this District, prepared under the auspices of the Bar

Association and the Washington Board of Trade, proposes some modification, substitutions and omissions of the law aud ordinances pertaining to the Health Department and Sanitation of the City. Therefore be it Resolved : That the Commissioners of the District of Columbia be requested to authorize aud direct the Health Officer to examine such parts of the proposed code and report alterations, omissions and substitutions, if any with such recommendations, as in his judgment may be necessary.

Motion to reconsider this resolution was made, but the chair postponed its further consideration until the next meet ing.

Dr. D. S. Lamb presented the following series of pathological, specimens illustrating tubercular lesions.

I. Specimens of tuberculosis from a cow which was slaughtered because of the disease. The lungs were studded with the tubercular masses; the pleurae showed the characteristic fungous-like growths; the liver contained many large tubercular masses some of which had undergone calcareous degeneration.

2. Tubercular bronchial glands, left lung and spleen.—The peritracheal and bronchial glands are much enlarged and cheesy. The left lung studded with miliary tubercles. The enlarged spleen, congested and with tubercular deposits. From a colored boy 3 years old ; his parents were healthy but there was a history of tuberculosis on the father's side, his two bothers having had the disease. The boy had been breast-fed till two months old ; always delicate ; dentition complete. April 8, 1898 he began to have painful cough and fever at night. Was admitted to Children's hospital April 20th, and under the care of Dr. Acker. The symptoms were loss of appetite, vomiting, irregularity of bowels, restlessness at night and much thirst. Cervical glands enlarged. Died April 29th, after a hemoptysis. The history of illness covered only 21 days. I made the p. m. examination. There was some emaciation. Slight bending of cartilaginous ends of ribs ; also a backward bowing of the legs ; glands of neck enlarged as stated. Tongue coated brown. In addition to the conditions described, there was blood in the mouth and trachea, follicular enlargement of tonsils, an abrasion on the right vocal cord. Lungs congested and studded with miliary tubercles ; some bronchitic exudate in right lung and oedema of lower lobe of right. Heart normal. Liver pale ; enlarged glands at posterior end of gall bladder. Old adhesions of spleen to diaphragm. Pancreas normal. Mesenteric glands enlarged and cheesy. Stomach and intestines normal except for two intestinal invaginations. Each kidney contained a few tubercles.

This case was reported by Dr. Acker to the American Pediatric Society at its last meeting June 2, 1898.

3. *Tubercular disease of the testes and spermatic cords.*—The cords are somewhat sausage-shaped masses which on section show tubercular deposits. From a colored man age 23 years who was in hospital one month. I made the p. m. examination. The body was well formed but somewhat emaciated. Some of the lower cervical glands were enlarged and tubercular. There were a few tubercles in the right lung and some oedema ; bloody mucus in trachea. The right pleura contained a good deal of blood the source of which was not determined but was supposed to be from tubercular glands. Left lung somewhat oedematous. Bron-

chial glands enlarged, cheesy and softened into cavities ; mediastinal glands in same condition. Heart normal. Ascending aorta showed fatty degeneration. General tubercular peritonitis with adhesions everywhere and large cheesy masses. Liver normal. Left kidney normal. Other organs not examined because of the peritonitis.

DISCUSSION.

DR. T. C. SMITH inquired the average length of life of an animal affected with tuberculosis of the lung. In reply Dr. Lamb stated that this was a difficult question, as the animals were usually slaughtered prematurely.

DR. BOVEE, referring to specimen No. 2 above, said that to him the most interesting feature was that the patient died fron hemorrhage from a tubercular lymphatic gland. This however, is not uncommon. Usually, when this stage of tuberculosis is reached, the patient's condition is such that a very slight hemorrhage is sufficient to produce death.

DR. LAMB agreed that this was an interesting feature. He recalled two simiiar cases—one a child of four, and the other an elderly person. In both, caseous bronchial glands were found, and in both, fatal hemorrhage resulted from the destructive process in the glands. Much hemorrhage can come from a tubercular bronchial gland.

DR. ACKER, under whose care this boy had been at the Children's Hospital said that a fatal hemorrhage like this was rare in children. Only a few such cases were on record.

He further explained the case, quoting from a report he had given before the Am. Pediatric Society in 1898.

A CASE OF SYMPHYSEOTOMY.

BY JNO. F. MORAN, M. D.

Emma G., admitted to Columbia Hospital, age 21, primipara. Labor began evening Nov., 13. Membranes ruptured spontaneously at 9.20 p. m. Pains strong, regular but ineffectual. A vaginal examination 11 a. m., Nov., 14th, revealed a contracted anterior posterior diameter with a relatively large head presenting at the superior strait with occiput to the left. The cervix was soft, yielding and dilated about two inches in diameter. Pelvic measurements were as follows: Between anterior superior spines, 21 c.c.m.; between crests, 22 c.c.m.; external conjugate, 15 c.c.m.; left oblique, 17 c.c.m.; right oblique, 18 c.c.m.; circumference of pelvis, 88 c.c.m.; true conjugate, 9 c.c.m, 3¼ inches (estimated).

The case was deemed a suitable one for symphyseotomy but the member of the Staff consulting was of the opinion that the high forceps operation might suffice. Repeated and ineffectual attempts to engage the head in superior strait by means of the axis traction forceps and the fact that the patient had been in labor nearly twenty-four hours convinced me that the safety of mother and child demanded eperative interference.

An incision was made extending two inches above to about one-half inch below the superior margin of the symphysis. The tissues anterior and posterior were carefully separated by the finger to the extent of an inch on either side of the joint, a plate inserted under the posterior surface, a metallic catheter placed in the urethra and held to one side by an assistant and the anterior surface of the joint thoroughly exposed by a retractor in the lower angle of the wound. The joint was severed from before backwards by means of an ordinary scalpel which permitted a separation of the joint about 5 ccm., (2 inches). The axis traction forceps were applied, careful and intermittent traction being made in order to

gradually dilate the cervix, the head was finally brought down to the inferior strait, the axis traction forceps removed and delivery of the live child completed with the short forceps.

Careful examination showed a bilateral laceration of the cervix, but the vagina and the urethra were uninjured and the perineum torn to the first degree. There was considerable venous oozing at the inferior margin of the symphysis which was readily controlled by packing with iodoform gauze. The pubic bones were easily approximated and kept in apposition by strips of adhesive plaster encircling the body supplemented with a well-fitting binder. The muscles and fascia were sutured with catgut and skin incision closed with silk-worm gut. The gauze packing was removed on the second day and dressing and bandages renewed. Sutures removed on the tenth day, primary union throughout. The advantages of the short incision as advised by Morisani was well demonstrated in this case as the subsequent history showed patient to be suffering from gonorrhœa. If the so called open method of exposing the entire extent of the joint by an incision of several inches extending to or beyond the clitoris had been done, the danger of infecting the wound could hardly have been averted.

An examination at the end of the third week showed that the joint had united. Patient was permitted to sit up and walk about the ward during the sixth week and did not experience the least discomfort or inconvenience.

The measurements of the child's head taken 24 hours after birth showed a biparietal diameter of 4 inches: occipito-mental 6 inches; occipito-frontal 5 inches. The relative measurements of the child's head and mother's pelvis proves conclusively, that delivery could not have been effected with forceps or by version without endangering the life of the child and perhaps mutilating the mother.

DISCUSSION.

Dr. Bovée congratulated Dr. Moran upon his result in this case. In the long history of the Columbia Hospital this was the first symphyseotomy in over 5,000 labors. He was particularly fortunate in that the union was good and strong. One point in these cases is to get firm union of the symphysis. Many cases cannot walk for months after the operation. He would suggest a tight heavy cloth bandage after the plan of the surcingle for the horse instead of the strips of adhesive plaster, as being more easily tightened by use of 2 or more straps and buckles.

Dr. Moran, in closing the discussion, said, that inability to walk was caused by a faulty operation—separation of the pubic bones farther than was permissible. He believed the symphysis could be opened three inches with no injury to the sacro-iliac ligaments. The gain in this case was two and one-half inches.

THREE CASES OF PUERPERAL STREPTOCOCCUS INFECTION SUCCESSFULLY TREATED WITH ANTI-STEPTOCOCCUS SERUM.

By John F. Moran, M. D.

The treatment of wound infection, and as such we may class in general also the infection of the endometrium, might be considered in a three fold light.

(1.) Destruction of the germ at the primary point of infection.

(2.) Rendering harmless the germs and their toxins taken into the organism from the point of infection.

(3.) Fortifying the organism in the struggle against the infectious germs.

Through the progress in the knowledge

of the etiology of wound diseases, above all through the knowledge of the invading point of the diseased germs, it is believed in the first place that treatment had made a great gain. As bacteriology has demonstrated that we were in possession of definite chemical means by which we were able to kill the germs in artificial media we must endeavor to immediately destroy the germs at the primary source of infection. The excellent results obtained in the antiseptic treatment of saprophytic infection of the puerperium have not been fulfilled in pathogenic infection. The invasive character of the pathogenic organism would seem in a measure to explain this. Already, in the majority of cases, the germ has penetrated into the tissues beyond the reach of local measures before the disease manifests itself by subjective and external signs.

During the past few years experiments have been made to destroy or neutralize the streptococcus infection by means of the antistreptococcus serum. So far the statistics have not been very favorable but from a careful analysis of the literature, many of the failures may probably be accounted for in one or more of the following ways: (1) Lack of bacteriological confirmation of the character of the infection; (2) inferior quality of the serum employed; (3) injudicious local treatment; (4) badly selected cases; (5) delay in the use of the serum.

It is important to determine whether the case be due to simple streptococcus, mixed infection or some other pathogenic organism. Curative effect is only claimed for simple streptococcus infection, although some cases of mixed infection are reported where by the use of the local treatment in conjunction with the serum, recovery has followed. Marmorek records 15 cases in which the serum was employed; 7 of which were due to pure streptococcus and all recovered; five were due to mixed infection of the streptococcus and staphyloccus two of which died; 3 were due to mixed infection with the streptococcus and bacillus coli and all died. The prognosis is distinctly more favorable when the case is one of simple streptococcus infection.

In many cases the serum was not used until all the other resources had been exhausted and the patients were in extremis.

I am satisfied that frequently repeated intra-uterine douches and use of the curette in streptococcus infection are decidedly harmful. The danger of introducing other germs and causing a mixed infection, producing more or less traumatism of this endometrium, thereby breaking down nature's protective zone of leucocytes and opening up new avenues for wide spread systemic infection and the consequent shock are in my judgment strong arguments against injudicious local treatment.

With the view of observing the effets of the serum, I determined at the first opportunity to treat cases by witholding local and general remedies as far as consistent with the welfare of the patient.

Mrs. A., age 33. Admitted in labor Nov. 17, 1898, at 11 p. m., membranes had ruptured 5 hours preiously. Normal birth at 4.25 a. m., Nov. 18th, and placenta followed spontaneously twenty minutes later. No vaginal examination during or subsequent to labor, but assistant supported perineum during delivery of the head. No douche given. Temp. 100 for twenty-four hours after delivery. Nov. 19th, 9 a. m. temp. 98, pulse 72. At ten o'clock had a severe chill followed by a rise in temp. to 104.2, pulse 128.

Suffering with headache, vomiting and severe pain in lower part of abdomen; lochia normal; 7 p. m., temp. 103.5, and as the uterus was high up and large, an intrauterine douche of sterile water was given with the view of removing any possible retained clots or shreds of membranes; the douche returned clear. A culture of the lochia was taken by means of the Döderlein tube.

The bacteriological examination made by Dr. Carroll, pathologist to the hospital, shows it to be a pure streptococcus infection. Nov. 20th, 9 a. m., temp. 102 pulse 104, and complains of chilly sensation. 10 cc. of Marmorek antistreptococcus serum was given at two p. m.; at 7 p. m., temp. 104 pulse 122, patient nauseated and has vomited several times, an additional 10 cc., of serum was injected; two hours subsequent temp. fell and at midnight was 101 pulse 88; nausea and vomiting had ceased, the patient is in a profuse perspiration and feeling quite comfortable. Midday Nov. 21st temp. 99, pulse 80, resting quietly and perspiring; 3 p. m. temp. 101.4 pulse 86, 10 cc. of serum inserted, but as the temp. was still rising at 7 p. m. 10 cc. was given; at midnight temp. 102.4 pulse 88; complains of headache and is restless. Nov. 22, 9 p. m. temp. 101 pulse 90, perspired more freely after midnight, slept very little not so bright as yesterday, 10 cc. of serum given and as the desired effect had not been obtained at 6 p. m. an additional 10 cc. was given. This was followed by a gradual decline to normal at midnight, attended by refreshing sleep.

Nov. 23, 9 a. m., temp. 101, pulse 96, injected 10 cc. 1 p. m. temp. 103, pulse 102; 10 cc. more was administered; at 6 p. m. temp. unchanged, pulse 114, Gave 10 cc. this was followed by a reduction of the pulse to 98 but no dropping of the temp. At 9 p. m. another 10 cc. given and was followed by a gradual decline of temp. attended with refreshing sleep throughout the night.

Nov. 24th, temp. 98, pulse 92, 10 cc. given to anticipate an evening rise and repeated at 9 p. m; 10 cc. was given at 6 p. m. Nov. 25th, and a like amount Nov. 26th, altogether 140 cc. were used. I am satisfied that the last three or four injections were unnecessary as the slight continued rise of the temp. after the 21st was due to an abscess forming on the right side of the abdomen, at the sight of one of the injections. This was freely opened and a bacteriological examination of pus showed presence of streptococci.

In this case it required 20 cc. to reduce the temperature and on the 23d inst, 40 cc. had to be given to obtain the desired result.

J. S. Multipara. Admitted to the hospital in labor, Dec. 11th, 9 a. m: normal birth at 6 p. m. and placenta delivered spontaneously one-half hour later. No vaginal examination made either during or after labor, and no douches given. On the afternoon of the third day patient complained of chilly sensation and headache followed by rise of temp. to 103, pulse 112. Bacteriological examination of vaginal culture contains streptococcus and staphlococcus, uterine culture negative. Dec. 23d, 9 a. m. temp. 102.4, pulse 122. Administered 10 cc. of serum and as temp. had risen to 103.6 at 4 p. m. 20 cc. more were given. This was followed by a gradual decline to normal at 3 p. m. on the following day, and never rose above 99.3 while patient remained in the hospital. With the exception of the one douche given in the first case neither of these patients received any local treatment.

Through the courtesy of Dr. Fry, I am permitted to report the following case: R. M. Primipara, was delivered at Columbia Hospital, November 23d. Labor normal. Culture taken from the uterus on 25th, showed streptococcus pyogenes. At noon 5th day after birth, complained of chilly sensation and 4 p. m. temperature had risen 102.4, pulse 94. At 8 p. m. 10 cc. of serum was given, and temperature gradually fell to 101 at midnight and remained so the following day. At this time 10 cc. of serum were repeated—3 p. m. temperature 103.8 intra uterine douche 2 per cent carbolic given; 6 p. m. temperature registered 102.4;a third 10 cc. of serum administered, and temperature gradually declined to 100 in the succeeding 24 hours; 6 p. m. November 30, 10 cc. and temperature registered normal. December 1st, at the same hour, the 5th, and last dose of 10 cc. was administered and patient's temperature never went above 99½ but once afterwards. This case in addition to the serum was given vaginal douches of sterile water three times a day.

While it is impossible to say of how much value the serum was in these cases "per se" yet when we consider the gradual lowering of the temperature in from 7 to 24 hours with a corresponding lowering and steadying of the pulse, attended with profuse perspiration and a marked improvement of the subjective condition after each injection, it would seem that the serum, especially in the absence of any other measures being used, exercised a beneficial and salutary influence.

DISCUSSION.

Dr. Bovee: Some practitioners have obtained from the use of serum good results. Dr. Richard Norris of Philadelphia who infected his finger in a surgical case, believes that he owes his life to this serum. On the other hand many have obtained negative results. He recalled a paper read before a meeting in the South, in which all kinds of cases were reported as having been cured by this treatment. The paper did not meet the approval of the members present, as it was too erratic and unscientific.

To use this serum successfully we must first know the variety of infection, and then the potentiality of the serum, for many samples of it are worthless. This is one source of error. Another is, that in many cases of streptococcus infection we are unable to find the germ, the infection may have spread inward. In other cases we may find the gonococcus and staphylococcus, and think we have not a streptococcus infection.

Dr. Chappell asked whether Dr. Moran used any drugs or treatment other than the serum; to which Dr. Moran replied in the negative.

Dr. Stone said that he was glad to find that a systematic attempt was being made by those having hospitals under their care to ascertain the value of this treatment. In late stages it is worthless. If given early, the chances of success are greater. Although he was a skeptic, he commended the investigation. If some physicians obtained good results, that is something gained. Poor serum may account for the failures. In the only case he has had, a mixed infection, the patient recovered. The serum first used had no effect on the pulse, temperature or other function. But when another brand of serum was employed, sweating, slight depression of the pulse, and other physiological effects were produced.

The question is, are we able to lay aside the old and tried treatment, and depend entirely upon serum therapy. Dr. Moran says that he does not now use the douche and intrauterine treatment. This is very radical. We are authorized by the best text-books to examine the interior of the uterus, and learn the conditions present, and we should do so, not depending solely upon the serum. He asked the opinion of the members

present, whether they were willing to lay aside the douche, and intrauterine treatment in these cases. Many think that the presence or absence of odor in the lochia bears a relation to the kind of infection and its severity. To many practitioners a bad odor signifies danger, and causes alarm. He, however, is better satisfied in sepsis, when there is a decided odor in the lochia, although it seems paradoxical. In these cases bacteria are present, but not necessarily decomposition of placental material. These cases get well, and in many cases where there is absence of odor, the patients die. Having a case of sepsis, without odor, but with marked constitutional symptoms, and the streptococcus is found, we should treat the case constitutionally, not locally. He endorses Dr. Moran's treatment in such cases.

Dr. CHAPPELL asked whether Dr. Stone endorsed Dr. Moran's treatment only in cases with systemic infection and no odor.

Dr. STONE replied that he regarded intrauterine treatment as of no value in pure streptococcus infection. Where, however, there is odor etc., he would use the douche, and local treatment.

DR. CHAPPELL said: That probably he was not familiar with the kind of cases referred to by Dr. Moran, where there was no odor in the discharge. In the cases he had seen there was always odor with the discharge and very often in his opinion, they were serious cases too. He recalled two such cases, in both of which he had happy results. One of these patients was nearly dead when he first saw her. In this case he used quinine, stimulants, the uterine douche, and iodoform suppositories in the uterus. One patient made a quick recovery.

He had lost two cases from puerperal sepsis. One of the cases however, had been in charge of a midwife sometime before he saw her, and it was too late for any treatment to be effective. The other case, his own, occurred soon after he began the practice of medicine. His consultant did not deem it advisable to use the uterine douche. Later it was used, but it was too late. This patient was taken sick on the third day and lived but a few days thereafter. He believes from his experience since, that this case might have been saved had the uterine douche been used from the first. In the class of cases he was familiar with, he would not like to abandon the line of treatment he had persued for the serum treatment alone.

DR. J. FORD THOMPSON thought Dr. Stone confounded the diseases sapræmia and septicæmia. The two were as different from each other as could possibly be. Dr. Moran's cases were cases of sapræmia. No surgeon would think of using the serum treatment for this condition, where there was constant absorption from septic material.

The great majority of puerperal fevers, and septic fevers following surgical operations were instances of sapraemia. The treatment should be to open the wound, and wash it out. This stops the absorption of septic material. In cases of septicaemia we do not have necessarily a bad wound; a very slight cause may produce streptococcus infection, and for such cases local treatment is of no avail: but it is entirely effectual in sapraemia. He has great confidence in the ability of the surgeon to cure sapraemia, but he has no confidence in the ability of anyone to cure septicaemia or pyaemia. He had not formed an opinion as to the value of the serum treatment, but should say that it is not entirely satisfactory in surgical practice. Nevertheless it is the duty of the surgeon to use the serum until its value is entirely settled. All such investigation is in the right line, and there may be a great future in store for this form of treatment. But a few cases are not conclusive, and from them we should form no fixed opinion.

Continued in June number.

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THE MILITARY SURGEON

A SUPPLEMENT TO THE

NATIONAL MEDICAL REVIEW

UNDER THE CHARGE OF

W. C. BORDEN,

Major and Brigade Surgeon, U. S. V., Professor of Surgical Pathology and Military Surgery, Medical Department, Georgetown University.

VOL. II. WASHINGTON, D. C., MAY, 1899. NO. 3.

Original Articles.

A FEW CASES OF SURGERY IN WHICH THE ROENTGEN RAY WAS USED.

BY GEORGE TULLY VAUGHAN, M. D.,

P. A. Surgeon, M. H. S. Professor of Principles and Practice of Surgery, Georgetown University.

The use of the Roentgen Ray in determining the location of foreign bodies in the tissues, the condition of the bones in fractures and dislocations, the presence of certain tumors, and even the outlines of the solid viscera, as the heart and liver, is now an old story, yet there are so many possibilities in connection with this mysterious force that the interest of the profession is still maintained.

I shall not attempt to explain the various theories as to the nature of this force, whether it is a fourth state of matter, the "radiant" or "ultragseous" state, through which are transmitted ultra waves of light, longitudinal ether waves without lateral propagation, or solid particles from the cathode or an electro-static condition between the object and the plate excited by the tube, but will refer only to the practical side of the subject by reporting and showing the skiagrams of a few of the cases in which the Ray has rendered valuable assistance.

CASE 1.—Sarcoma of lower end of radius. This patient was about 45 years of age. He first had a Colles' fracture of the radius and somewhat over a year later this tumor developed in the lower end of bone. It is well shown in the skiagram. The forearm was amputated and the patient is now well. A skiagram of a normal hand is shown with this for comparison.

CASE 2.—Sarcoma of the right ulna. D. S. aged 17 years; native of Washington, had a "greenstick" fracture of the right ulna three years before I saw him. Two and a half years later the bone began to enlarge, and one day he thinks he hurt it throwing a cob or stone. There was very little pain On examination a spindle shaped swelling of the forearm was observed with fracture of the ulna. The skiagram taken by Dr. Kinyoun shows the outlines of a tumor springing from the ulna and extending nearly to the radius, and the porous, worm-eaten appearance of the bone about the center of the tumor.

The tumor was principally on one side, the interosseous side not encircling the bone.

The arm was amputated just above the elbow and the patient recovered without incident. Microscopic examination by Dr. Kinyoun showed a small round-called sarcoma.

CASE 3.—Gunshot wound right orbit. G. M. colored, 13 years old was shot with a pistol, the ball apparently a .32 entered the right orbit between the bony wall and the eyeball, passing backward. A probe passed straight back about two and one half inches. There was considerable hemorrhage and the wound was filled with iodoform gauze.

The skiagram shows clearly the track of the ball stuffed with gauze, and the ball itself as it passed backward apparently through the spheno-maxillary fissure into the zygomatic fossa until it struck the rounded anterior surface of eminentia articularis, causing it to turn downward at right angles to its original course, lodging about midway between the condyle and angle of the lower jaw probably in one of the pterygoid muscles. It could not be felt with the finger and no attempt was made to remove it. It caused no inconvenience beyond slight swelling which soon subsided and the boy was discharged recovered in two weeks.

CASE 4.—Gunshot wound of the tibia. W. B. colored male, 30, N. C., laborer was shot while running March 12th, 1899. The ball entered about the middle of the calf of the right leg and could not be traced with a probe. Both bones of the leg were fractured about the upper third.

The skiagram showed the situation of the fractures, and the location of the ball in the tibia about 4 inches below the knee joint. Operation March 15, the ball was removed from the front and outer side of the tibia with several small loose splinters, the bone set, the wound closed and dressed and plaster of Paris applied from middle of the thigh to the toes.

The patient is doing well and is still in hospital.

CASE 6.—Gunshot wound of the forearm. F. W. male colored; member of Co. "G" 8th U. S. V. Infantry (Immunes) was shot March 8th at close range, the ball entering the back of the right forearm about two inches below the head of the radius. There was no wound of exit and the ball could not be felt anywhere by palpation. A skiagram showed two pieces of lead, the large piece being near the anterior surface of the forearm, and the smaller, near the posterior surface close to the ulna about two inches below and to the inner side of point of entrance. The ball a .38 calibre had struck the sharp outer border of the ulna upon which it had split as if it had been a knife edge without fracturing the bone, the large fragment —the chief part, passing forward and slightly downward between the two bones to lodge in the superficial group of muscles on the anterior surface of the forearm; the small fragment running down the ulna along its outer or posterior surface, stopping next to the bone. Both fragments were removed and the patient recovered without trouble. This case shows the value of the ray in revealing not only the location of the bullet, this might have been done by means of a probe, but, in demonstrating the fact that there were two fragments, which the probe would almost certainly have failed to do.

CASE 6—Gunshot wound of the neck

of the femur. J. B., colored; age 30 years; native of District of Columbia, also a member of the 8th U. S. Vol. Infantry, was shot at the same time and by the same man as the preceding case. The ball, a .38 caliber, entered the most prominent part of the left buttock just outside of the tuberischii. The skiagram showed the ball lying on the posterior surface of the neck of the left femur. The probe had failed to detect it. The ball was removed by an incision from the trochanter major backward and upward in the line of the fibres of the gluteus maximus muscle which were separated until the pyriformis was brought into view. The ball was found beneath this muscle on the neck of femur. No opening in the capsule was found. The direction of the incision permitted separation of the muscular fibres to the bottom of the wound so that none were cut across. The patient recovered without trouble.

Case 7—Gunshot wound of the liver, intestine and kidney with severe burn. This case shows the bad effects which may follow too prolonged or improper exposure to the Ray, and occurred at a time when we did not know as much about the cause and prevention of such accidents as we do now. S. D., colored, male, aged about 18 years; shot March 5th, 1898, the ball entering in the anterior axillary line on the right side between the 8th and 9th ribs.

Three skiagrams were taken showing that the ball was probably in the muscles of the back, but from the patient's symptoms, bloody urine and vomiting, it was decided to operate. Operation the day after the injury showed that the ball had perforated the right lobe of the liver, the edge of the colon and lower part of the right kidney, beyond which the ball was not traced. There was considerable bloody serum in the peritoneal cavity, evidently from the kidney as it was still bleeding. The perforations in this organ and in the intestine were sewed up with fine silk; that in the liver was not closed as there was no hemorrhage from it. The abdominal cavity was flushed out with salt solution and the wound closed without drainage. Five days later the wound was first examined. There was primary union throughout but the skin over a large area of the abdomen was of a darker hue—a reddish brown, than the normal skin (patient was a dark mulatto, but this was darker still). There were no blisters and no pain whatever. At the second dressing, 11 days after the operation, the appearance was that of a large blister, the cuticle being raised, and separated from the cutis by serum over a space about 8x4 inches. Three days later a small blister was discovered on the right side of the back, which had been exposed to the Ray—one of the skiagrams having been taken from behind. Thirty-three days after the operation the stitches were removed, there was perfect union, but there was no cuticle over a space about 8x4 inches, including the incisions. There was no pain.

Forty-nine days after the operation the patient insisted on going home, the posterior burn was nearly well, but the one in front remained about the same. I heard later from this patient that the ulceration continued through the cutis until the muscles were exposed, and then began to heal. At the present time the patient is going about with an ulcer on the abdomen, about 3 inches in diameter, which seems to be slowly healing.

Mr. Merrill, the director of the Roent-

gen Ray apparatus of the Lionel Laboratory at the Emergency Hospital, to whose courtesy and skill I am indebted for the most of the skiagrams shown tonight, informs me that covering with cloth, even of the thinnest kind, of the part exposed will prevent burning, and that the London Roentgen Ray Society after considerable investigation has been unable to find a single recorded case of burn except where the parts were exposed without covering.

The burn also depends on the intensity of the electric current and is less likely to follow the use of the static current. Every exposure without covering is not followed by a burn, it is only when the exposure is prolonged or the current very strong.

Case 8—Fragments of a needle in the knee. Child, male; 5 years old, stuck a needle in the left knee on the inner side. The child must have fallen on it so that the needle broke into three pieces, the point not penetrating while the other two pieces buried themselves in the tissues. It was not known at the time that two pieces were in the tissues. A piece of thread was attached to the eye but this unfortunately was broken off or pulled out in the efforts to extract the needle. Only a small red spot marked the point of entrance. A skiagram was taken, which I show you, in which the needle was clearly seen, even the eye being clearly visible, opposite the knee joint. The child was chloroformed and a semicircular flap of skin with the puncture in the center dissected up showing the two fragments lying on the capsule of the joint, but not penetrating the cavity. After removal, the wound was closed and the child recovered without further trouble. This skiagram shows clearly the cartilage uniting the epiphyses and diaphyses of the femur and tibia, these parts seeming to be separated owing to the less density of the cartilage as compared with bone. The patella is not visible as ossification in this bone does not begin until from 3 to 6 years of age.

Case 9—Tin Whistle in the Oesophagus. C. B. colored, male; aged 2 years and 11 months swallowed a circular tin whistle March 13th, 1899. He screamed at the time and complained of pain in the throat. A finger in the throat failed to detect the whistle. He vomited after eating and continued to vomit daily until admitted to the Emergency Hospital, March 16th. A skiagram showed the foreign body faintly outlined in the middle line opposite the 11th dorsal vertebra. The outline is necessarily indistinct owing to the movements of the diaphragm. March 18th, 5 days after the whistle was swallowed, the abdomen was opened by a longitudinal incision through the left rectus muscle and two fingers introduced and the whistle located in the oesophagus just above the diaphragm. An attempt was made to hook it into the stomach with the finger, which was still outside of the stomach wall, but without succeeding. A No. 20 F. catheter was then passed through the mouth into the stomach and though it did not push the whistle into the stomach, it probably tilted it so that the next attempt with the finger brought it into the stomach. A fold of the stomach containing the whistle was then brought out through the abdominal opening, packed carefully around with gauze, incised and the whistle. extracted The stomach wound was closed with two rows of sutures, the first uniting the mucous membrane, the second uniting the peritoneal surfaces and including peritoneum and muscle. Fine silk and the matt-

ress suture were used and the abdominal wound was closed without drainage with interruped silkworm gut. Two large lumbricoid worms were felt in the small intestine. The child recovered without trouble and about two weeks after the operation the two worms were removed by means of vermifuge, (Santonine). The whistle measured fifteen-sixteenths of an inch in diameter.

In the diagnosis of obscure fractures, in determining whether or not a fracture exists, and whether or not the bones are in proper position after they have been set, the Ray is of the greatest value.

I will not prolong this paper by describing the numerous cases of fracture in which I have resorted to it, but will briefly mention one in which I was enabled to decide that there was no fracture of the neck of the femur. An old lady in getting into a carriage fell and struck the left trochanter on the pavement. There was pain, inability to stand or walk and spasmodic action of the muscles of the hip on the slightest attempt at motion. There was no shortening on measurement. The skiagram showed the femur unbroken, and all the inconvenience of a fracture dressing which would have been used on the principle of giving the patient the benefit of the doubt, was avoided.

Selections.

Bathing a Regiment.

The maintenance of the health of troops in the field has for many centuries put to the test the ingenuity of the ablest medical aud military minds. Every known means has been resorted to in an effort to keep troops in a good healthy condition. At a regular permanent post, where barracks are furnished and all modern means are at hand, this is not such a difficult matter. But with troops in the field it is quite different.

When a camp is about to be selected, the first consideration is that of the water supply. Experience has taught the army that there should be not only a plentiful supply of good, pure water for drinking purposes, but a sufficient quantity for bathing purposes. To this end, in camps of instruction, a system of water pipes is laid over the entire camp, thus making the obtaining of water an easy matter and the water accessible to all.

But, even with a very abundant supply of good water, it is very difficult to get the men to bathe thoroughly. This is not so much due to any inclination they may have toward uncleanliness, as it is to the lack of proper facilities. Where the camp is near a stream, in the summer season all the men are only too glad of the opportunity to take a swim; and realizing the good derived from this practice, the company commanders march their commands in a body to the river for that purpose. But in the cold seasons of the year this is impossible, and then it is that the men will habitually shirk the use of water for bathing purposes, and it is a most difficult matter to get them to observe proper cleanliness.

But at last a way has been found that makes bathing not only easy but an actual pleasure. For this, credit is due Major Edwin Field, the senior surgeon of the Fourth New Jersey Volunteer Infantry. The arrangements are somewhat as follows: A frame one-story shack is constructed that will accomomdate about twenty men at one time. This place is divided by a partition into two rooms, so that one can be used for dressing purposes. At different places in the ceiling project pipes which scatter the water in all directions, thus making the shower bath. By means of a simple valvular arrangement the temperature of the water is easily regulated from hot to cold. The rooms are kept

comfortable by an ordinary Sibley stove in the dressing room.

Outside of the shack is the furnace. This is a very simple arrangement and keeps the water at the proper temperature. It is constructed of brick, very much in the shape of a bake-oven. Instead of a pipe there are several coils of pipe through which the water passes, and is thus kept constantly warm. The cold water comes through a different pipe which can be admitted into the main channel as needed. Thus, in the simplest way, the water is kept at the proper temperature.

Two men are detailed to look after the arrangements and keep the furnace in good working order. Certain days are set apart for the different parts of the regiment. Each battalion uses the bath two days a week, thus taking six days. Sunday and three nights are set aside for the use of the officers. Although these rules govern the outfit, the men can bathe two or three times in a week, and the great majority of them do. To make sure that all men of the command get the benefit of at least one good bath a week, a registry is kept, and every man is required to have one to his credit when the week ends.

The actual cost of the whole outfit is comparatively small, the entire amount being less than two hundred dollars. H. M. Cohen, Acting Assistant Surgeon, U. S. Army. N. Y. Med. J., 1899, lxix, 409.

Gunshot Wounds of the Brain.

Experiments on eviscerated skulls and those with their contents intact have shown that bullets passing through the former produce simply clean perforations of the bony walls, while the latter, when fired upon under precisely similar conditions, exhibit phenomena comparable to those produced by explosive projectiles, indicating that the presence of the brain markedly influences the dynamics of the missile's impact. But in all the experiments heretofore conducted the tendency has been to consider the bone lesions produced, to the exclusion of the injuries inflicted on the cranial contents. Professor Tilman (Arch. für klin. Chir., lvii, 3, p. 608, 1898) has for several years been making observations of the brain lesions produced by the bullet of a nine-millimetre revolver, and groups the effects produced under three heads—first, the destruction of brain substance in the line followed by the projectile, then the crushing resulting in the immediate vicinity, and lastly a species of concussion which is demonstrable through the increased number of hemorrhagic points and the minute lacerations of cerebral tissues. These latter injuries are greater in degree in proportion to their nearness to the bullet hole and diminish in intensity toward the periphery. The diameter of the perforation increases to about its middle point and then grows less, so that the wound of exit is smaller than that of entry. Owing to its greater vascularity and more delicate structure the gray matter suffers more than the white. That these lesions are attributable to hydrodynamic pressure effects was demonstrated by cinematographic photography, which showed either a momentary increase in size of the entire cranium or even an explosive spurting of fluid through the apertures or crevices produced. In ordinary concussion all parts of the brain are affected to an equal degree, but this form of gunshot concussion is due to a force acting from within outward and compressing the brain substance against the skull wall as well as destroying it along the line of fire, and produces a greater effect on the central masses than at the periphery. This internal disorganization is to be considered characteristic of injuries of this kind, as no other form of traumatism is capable of causing it. The clinical picture is a composite of the results of the separate lesions, and it is impossible to diagnosticate them separately. The observations showed that expectant treatment (v. Bergmann) is most rational. Med. Rec., N. Y., 1899, lv, 283.

Food and Clothing of Troops at Manila.

In a recent report to the surgeon-general, Maj. Herbert W. Cardwell, chief surgeon, Vols., states that in his opin-

ion the government ration contains an excess of meat and a deficiency of vegetables for the climate of Manila. After the long voyage to the Philippines the salt meat became distasteful to the men and they craved vegetables. The needful vegetable diet was not on hand in the Subsistence Department, and the men consumed large quantities of native fruits, with resultant diarrheas and mango boils. Pineapples were especially dangerous, as they were usually peeled by the natives and exposed to the sun and flies some time before sale. The men craved and needed prunes and other American fruits, beans, rice, peas, oatmeal and other cereals, and canned tomatoes, corn, succotash, etc. The salt meat ration was in a great part wasted, and need not have been issued except in sufficient quantity to yield cooking fat. The fresh meat ration was difficult to procure, and coming from refrigerator ships, could not be preserved longer than twelve hours. Its quality was excellent. Concerning the clothing, he states that the earlier arrivals suffered severely from the lack of suitable clothing, but the first issue of light-weight underclothing corrected this evil. The Khakie uniform has not been issued to any of the troops. The canvas fatigue suits or overalls were unfit to be worn without underclothing until several washings had softened their texture. Many men were disabled from duty by chafing caused by these harsh uniforms. The most comfortable as well as the neatest uniform for the Philippines is that provided by the Spanish government for the 73d Regiment of Jolo, consisting of an undershirt of white flannel, closely resembling the heavier outing flannel of the United States, made in form of a jacket, light underdrawers and white duck uniforms with a belt. This looks well with or without the blouse, and protects the latter perfectly from perspiration. It prevents chafing, and is never too warm. J. Am. Med. Ass., 1899, xxxii, 626.

Appendicitis in French Army.

A comprehensive study of the cases in the army during the last three years—171—shows that 83 were treated medically and 88 were operated on. Medical treatment had a mortality of 4 per cent among those treated before the fourth day; 37.8 per cent among those treated from the fourth to the eleventh day, and over 50 per cent of the few whose affection was not diagnosed and treated correctly until after the eleventh day. The reports of surgical intervention indicate that it is better to wait before operating until the formation of a purulent collection, as the mortality among those operated in the first five days amounted to 42 per cent, while it was only 30 per cent of those operated the fifth to the tenth day. There were two deaths among 14 operated à froid. Another point in which these statistics afford a surprise is that the mortality among the cases in which the surgeon sought out and removed the appendix, amounted to 7 out of 18 cases, while in 56 cases in which the intervention was restricted to opening the abscess and draining, there were only 16 deaths. The best results were attained with an ilac incision, that is, parallel to, and not far from, Poupart's ligament.—Chauvel: Bull de. l'Acad. de Med. January 24. Rev'd in J. Am. M. Ass., 1899, xxxii, 626.

Tropical and Camp Disease.

Buckingham gives an account of some 130 soldiers invalided from Santiago that were under his care at the Boston City Hospital. All probably had malaria; usually of the estivo-autumnal type. Often a diagnosis could not be made at first from the blood, but subsequently, plasmodia were readily found. The spleen was enlarged. The patients usually were pale. Chills were infrequent, but attacks of fever, not always associated with prostration, occurred very often. A number of cases of neuritis developed among these patients, but it is uncertain whether they were due to the malaria or the quinine. The blood of nearly all the patients caused a moderate clumping of typhoid bacilli. Buckingham (E. M.) Boston, M. and S. J. (Phila., M. J., 1898, ii, 1003).

Milk-Leg in Typhoid Fever Among Soldiers.

Da Costa (Internat. Med. Mag., January, 1899) found that twelve per cent of 135 soldiers treated for typhoid fever in the Pennsylvania Hospital suffered from milk-leg. This is six or eight times as frequent an occurrence of this complication as has generally been noticed. No sufficient reason could be assigned for this, as they had not been subjected to long marches or other exhausting exercises. This trouble has usually been ascribed to phlebitis, but there is not necessarily any inflammation of the vein antecedent to the thrombosis. If present it causes pain, which is otherwise absent. The leg should be elevated, and hot lead-water or witch-hazel applied to relieve pain, to be followed by strips of belladonna plaster if pain continues. Absolute rest is essential. It is of the utmost importance that the patient does not get out of bed too soon. When he does get up he should have either an elastic stocking or flannel bandage. Sometimes there will be pain and swelling of the leg for as much as eighteen months afterward. Medical News, 1899, lxxiv, 336.

Tuberculosis in the French Army.

Kelsch presented to the Academy of Medicine, December 27th, the results of his experiments with the dust of barracks. He found it difficult to produce tuberculosis in guinea-pigs by injecting the filth from spittoons into their peritoneal cavities. One-third of 122 animals thus treated died of acute infections, some were killed and examined, with a negative result, while the rest remained in perfect health. Of 91 animals inoculated with nasal mucus, only one succumbed to tuberculosis. This mucus came from a cuirassier in apparently perfect health. Either there were no tubercle bacilli in these materials or if present they were not of sufficient power to triumph over an animal belonging to a species peculiarly susceptible to the disease. Medical News, N. Y., 1899, lxxiv, 219.

The Protection of our Troops in the Tropics.

Lieut.-Col. R. M. O'Reilly, the surgeon sent recently to Jamaica to study the methods employed there for the protection of the British troops from disease and the deleterious effects of the climate, has made a report to Surgeon-General Sternberg, embodying the following recommendations: 1. The troops for service in Cuba should, as far as possible, be recruited in the Southern States, and a large proportion of these troops should be colored, with white officers. They should be thoroughly protected against smallpox before embarking for the island. 2. They should be sent there very shortly after the close of the rainy season, say at some time in November. 3. They should be quartered in barracks, the dormitories of which are raised above the ground, the ground underneath which is cemented, and most liberal ventilation afforded. All underbrush within practicable distance should be removed. The earth-closet system should be used in preference to cesspools, and the excreta removed by contract. The kitchens should be detached and protected against infection. Mosquito bars should be furnished. Abundant water-supply should be provided, and all drinking-water should be filtered or boiled. Each man should be allowed a minimum of seventy-five feet superficial and six hundred cubic feet of air space. Bathing facilities should be provided, and their use made compulsory. Drainage should be carefully provided for. Amusements, games, and athletic sports should be provided for the men. 4. Clothing. Although there are objections to the khakie, the testimony is generally favorable to its use, and it is therefore recommended, but the blue flannel shirts and light flannel drawers should always be worn. Light cork helmets, made so as to shade the back of the neck, should be issued. Waterproof overcoats should be provided in limited numbers for use of the necessary guard and orderlies during the rainy season. The other articles of our

clothing fulfil the requirements. 5. No improvement on the present ration can be suggested. If it errs at all, it errs on the side of two great liberality. Post troops should be saved from all exposure at night and in the early morning, and no one should be called on for any duty at night or early in the morning without being given at least a cup of coffee. 6. Rigid discipline should be enforced, communication with the towns should be reduced to a minimum, and every means used to impress upon officers and men the fact that indulgence in spirituous liquors and excesses of any kind are exceptionally dangerous. Med. Rec., N. Y., 1899, lv, 168.

Cardiac Degeneration as Observed in the Soldiers of the Late War.

Dr. Henry A. Fairbairn, of Brooklyn, considered, in a general way, degeneration of the heart wall as it occurred during and after specific fevers. At St. John's Hospital he had had under observation 272 of the returned soldiers. They presented signs of infection, chiefly malarial. In 155 there was marked disturbance of the vascular system. Of these, only 3 presented well-marked signs of endocarditis. In 133 there were soft systolic murmurs heard at the apex and base of the heart, showing the degenerated state of the heart wall. Med. Rec., N. Y., 1899, lv, 173.

Malaria at Montauk.

Cotton describes the varieties of malaria that he observed among the soldiers at Camp Wikoff. The disease had usually been contracted at Santiago, and the majority were apparently infected after July 19. Most of the cases were convalescents, without parasites. Nearly all were intensely anemic. The privations of the voyage caused a number of convalescents to relapse. Nearly all of the cases with large spleens were long continued tertians. Two of the cases simulated sunstroke, but in both, parasites were found in the blood, and recovery ensued. Two patients passed into a state of profound collapse at the height of a paroxysm. Coma occurred in eight cases, some of the patients being brought in this condition, others developing it in the ward. The patients lay still, with quiet extremities, without muscular twitching, or paresis, or loss of muscular tone. Breathing was regular and somewhat stertorous. The eyes were open and motionless, and the pupils reactive. The reflexes and sensation were preserved. One patient was treated with vigorous doses of strychnin, and developed tetanic convulsions, but he ultimately recovered. In treatment, quinin administered by the mouth appeared to be of no value. A number of cases with irregular fever yielded the Widal reaction, and although plasmodia were not found, it is possible that some of them represented mixed infections. In all, about 300 cases were treated. Cotton (F. J,) Boston M. and S. J., 1898, cxxxix, No. 24. (Phila. M. J.)

Some Observations on Malarial Disease in the Province of Santiago De Cuba.*

The most prominent of endemic diseases in this district is malarial fever. The statement has been made by a native physician of reputation that more people die from it yearly in this island than from all other diseases combined. No matter how mild the case, the disease in the tropics should always be regarded as of possible serious import and the case treated accordingly. It is a disease that often attacks the natives, but the newcomer from northern countries rarely escapes its influence. If not directly fatal, it always undermines the health, and debilitates and drains the system, thereby rendering it more susceptible to other infections and paving the way for organic diseases and chronic invalidism.

Malarial disease presents so many different forms that it frequently leads to fatal errors in diagnosis, by closely simulating grave organic and nervous lesions. A careful microscopical examination of blood specimens would reveal

*Read before the chief surgeon of the Department of Santiago, Cuba, and transmitted from the office of the surgeon-general of the army.

the true nature of the malady and point out a line of treatment with remedial measures of truly specific value. It can safely be asserted that a timely hypodermic or intravenous injection of quinine in solution has saved a good many lives. The combination of quinine and urea (quinine dihydrochloride carbamide, containing sixty-nine per cent of pure anhydrous quinine) has given great satisfaction, and the writer has used it since 1893 in hospital and private practice in a large number of cases, without producing a single abscess. It dissolves in an equal quantity of distilled water. The solution being alkaline, the quinine is not precipitated by coming in contact with the alkaline juices of the body, and is therefore readily absorbed. Thirty and even forty-five grains in twenty-four hours have been given in grave cases of malarial hæmaturia with good result, without any apparent harmful effect from the urea existing in combination with the salt. Native physicians in this district seem to regard all hæmaturia as of malarial origin, and exhibit rather large doses of quinine. The mortality in these cases is said to be high, and well-informed physicians from the southern United States, where hæmaturia also is frequent, allege that quinine only adds to the renal inflammation, and abstain from its use entirely, with a seemingly lower mortality rate. Clinical experience and microscopical investigations have taught me that quinine in large doses does harm when the plasmodium is absent from the blood, but is decidedly beneficial when the plasmodium is present ; in other words, when the hæmaturia is really of malarial origin.

The malarial organism finds a most favorable soil in certain regions of this district, where the altitude is low and hygrometric influence marked.

The period of time when malarial fever first appeared in this part of the island can not be ascertained, owing to the lack of medical statistics. It is certain, however, that it has existed for a long time under the name of "calentura," a term which is nowadays applied to any form of fever by the natives. At the present time malarial disease is very prevalent, not a very surprising fact if we consider the following conditions in toto :

1. A tropical climate with abrupt temperature changes.

2. An unhealthy soil, with inadequate drainage, and a constantly changing level of ground water, with areas of water-logged land and marshes.

3. Profuse tropical vegetation, with decaying organic matter furnishing a most favorable breeding place for suctorial insects.

4. Areas of land, previously cultivated, lying waste for several years.

5. Hygrometric variation ; a prolonged rainy season flushing old river beds which are entirely dry during the rest of the year.

These associate conditions are recognized as potent factors in the biology of malarial disease, not only by stimulating plasmodial propagation, but also by their injurious influences on humanity. The strongest pre-disposing element in the development of any disease is a lowering vital resistance, be this through unsanitary surroundings, intemperance, or undue exposure. As soon as the individual standard of health is lowered through any or all of these agencies the morbid influences find a favorable soil and flourish, and this applies especially to malarial disease. There is no doubt that a good many people, even though directly exposed to the malarial poison, escape infection. This can only be explained on the ground of a perfect physiological mechanism ; let this individual, however, undergo severe mental strain or prolonged and unusual physical exercise, or become intemperate, then the perfect physiological machinery breaks down, and the system can no longer withstand the invasion of the poison even on moderate exposure. A marked illustration is offered by the late campaign. Strong, healthy men from all parts of the United States were sent to the island ; some, failing to adapt themselves to tropical influences, continued to pursue their northern habits, and, not being used to the high temperature and marked degree of humidity during the day, threw

off all superfluous clothing and rashly exposed themselves to the chilling night air; others, in trenches, were forced by the existing circumstances to endure all sorts of hardships, constantly exposed to malarial poison. A number of these men succumbed to the disease; a great many have come out alive, but are nothing more than physical wrecks. Excesses and intemperance of any kind are powerful predisposing factors in the tropics, particularly at the end of the rainy season, when malarial prevalence reaches its maximum.

The parasites met with in malarial disease are very numerous in this part of the country; the malignant varieties greatly exceed the benign, the latter being generally represented by double or multiple infections.

The benign forms encountered so far have been in the foreign element mostly, in soldiers and civilians from North America. This leads me to suspect that the malarial infections antedate their arrival here on this island, and this in a good many instances is supported by the previous history of the patient. In a few specimens the quartan parasites were discovered, in the rest the tertian type, mostly of the double variety. In isolated cases a multiple tertian infection was noticed; one such case was under my care at the Josiah Simpson General Hospital, Fort Monroe, Virginia. The patient was sent from Ponce, Puerto Rico, to the hospital for treatment. The temperature chart which accompanied him showed a distinctly remittent fever curve. Examination of the blood revealed the benign tertian parasites in all stages of development. Under moderate doses of quinine the remittent fever gradually resolved itself into an intermittent quotidian, and later into tertian paroxysms, which yielded eventually to quinine. It is not uncommon in the North to see a quotidian fever, at times even without specific medication, change to the tertian type.

In the tropics, however, it more frequently takes on the malignant form. In the active element, although a number of cases were examined, benign parasites did not come under the writer's observation.

The malignant type seems to be the endemic form of malarial parasite in this region; the pigmented and unpigmented malignant quotidian parasites are notably abundant, in the native as well as in the foreign element. They appear as minute amœboid bodies, with constant tendency to ring formation; after a few seconds of rest they would diffuse themselves through the cell substance, almost disappearing from view. They seem to obtain nutrition in this manner in their early phases, precipitating fine black pigment in the one, but not in the other variety. The two types have not been found associated. The unpigmented forms were very frequently found in dark bronzed red blood-cells. The number of these parasites in the circulation must be enormous; in one field as many as eighteen hyaline bodies were found (one-twelfth oil-immersion, Bausch and Lomb). The crescents in both these varieties seem to be nearly alike; they are smaller but thicker than those found in the tertian malignant form; the central cluster of pigment is rather fine and gradually arranges itself in the form of a fine network, the crescentic body contracting—i. e., becoming shorter and rounder. Their resisting power must be very marked, for one was observed undergoing gradual changes for a space of six hours, assuming a finally rounded form, the central pigment resembling a delicate coil of black thread.

In the malignant tertian variety the parasites were found to be much larger than in the malignant quotidian, ranging in size from a third to two thirds of that of a red blood-cell, with very fine, active, black pigment. The earlier stages are amœboid, but these movements gradually cease. The crescentic form is larger than in the malignant quotidian, and the central pigment coarser and more active; they are frequently found adherent to the red blood-cell.

Mixed types were also met with; in one case only crescents were found, the patient being under observation for rwo weeks; he was very anæmic and had an enlarged spleen, but was practically free from fever. In three cases of malarial hæmaturia, or rather hæmoglobinuria, a

few hyaline unpigmented bodies were found, some fully formed pigmented parasites, closely resembling, but larger than, the malignant quotidian, with very fine yellowish-brown pigment; only one case presented crescents. The light color of the pigment is probably due to deficiency or marked diminution of the hæmoglobin.

In three cases the writer has met with a small, rod-shaped body, of a dark bronze color, of about half the length of the diameter of a normal red blood-cell, and a sixth of its length in thickness; the ends were somewhat thick and rounded. The organisms were not numerous in a specimen but very motile, rapidly passing across the field by a peculiar swinging motion of the posterior half; there was no amœboid movement; in its centre a highly refractive spot was seen, closely resembling a spore. The organism attacked a number of red cells in its course, apparently endeavoring to enter one; at times it would lie in close apposition to a cell. While under observation it gradually increased in thickness, especially at the ends. The movements became slower and finally ceased, and the bright refractive spot was seen to escape from it, dancing about between the adjacent cells, where it seemed to penetrate one and become lodged. The organism itself again became motile, the difference in thickness between the extremities and the centre becoming more marked, till finally a constriction separated the anterior from the posterior segment. In the latter another bright spot was visible. The organism divided into two parts at the constricted point. The posterior segment, with its spore, becoming round, entered a near-by red-blood-cell, where it remained without any further change; the anterior segment was lost sight of. In one case this organism was found associated with small tertian parasites; in the other, with two very fine hyaline unpigmented bodies, resembling the malignant quotidian. In all these cases a large number of highly refractive spots identical in appearance with the discharged spores, were found, both free in the plasma and enclosed in the red cells. Owing to the limited number of cases studied so far, no deduction will be made as to the probable pathological significance of these organisms; they will be reported on at a later date.

It is possible that the various clinical types of malarious fever are produced by one form of plasmodium, and that the varieties we observe are the result of alterations the parasite undergoes in the system, influenced possibly by climate and the patient's vital resisting powers—i. e., by the condition of red blood-cells, leucocytes, and nervous force. That these factors exert a great influence can not be questioned. We know that through some agency plasmodia are allowed to lie dormant in the system for a year or more without materially influencing the patient's condition, but when the system is depressed by a sudden change of climate or diseased processes the soil, for microbic development is rendered favorable and the parasites multiply. We further know that some individuals recover from mild malaria (plasmodia present in the blood) without the use of quinine, some with very little quinine, while others recover only under very large doses. If we could grant the possible existence of a malarial antitoxine the problem could be easily solved; but, if we admit that, would not this force us into admitting immunity as the direct result of antitoxine formation, as is the case, for instance, in yellow fever? Clinical experience does not bear out this statement; on the contrary, one malarial attack distinctly predisposes toward another. Residents in malarious districts—born and bred there—are by no means exempt from malaria; they are not immune; their system has adapted itself to tropical influences and surroundings; they are, moreover, fully acquainted with the dangers of the tropics, and avoid as much as possible violent exercise, exposure to direct heat of the sun, and drenching rains. They realize the importance of changing their damp clothing before the sun sets, and are not given to excesses of any kind. For these reasons they are less liable to malarial disease than non-

residents, but when they are attacked by it the disease does not tend to pursue a mild course; this is especially true in regard to the lower classes, with whom fatal malignant types are common. These facts in themselves directly oppose the thoery of malarial immunity; it appears to be more a question of vital resistance and physical tolerance than of antitoxine formation. The plasmodia within the human organism appear to be possessed of a remarkable affinity for the red blood-cells, owing probably to the amount of free oxygen they contain, which latter is an essential factor in the developmental process of the parasite. They seem to derive necessary nutritive elements from the albuminoid substance—the globulin—changing the hæmoglobin as they mature into melanin, which is deposited in the form of fine or coarse granules. It is possible that this results from the abstraction of oxygen and a gradual disappearance of the globulin. Certain amounts of waste products—excrementitious matters—are formed which are toxic to the human organism. When sporulation takes place, and the parasite-containing blood-cells rupture, the spherules are suddenly thrown into the plasma, giving rise to malarious manifestations. What is this due to? To an impression made by the presence of the foreign bodies circulating through the basal ganglia and pontobulbar nuclei? To rapid invasion of new red blood-cells by the hyaline bodies? To a setting free of the excreta—toxines—of the sporulating group, profoundly shocking the sympathetic nervous system? It is possible that the explosive phenomena observed in malarial paroxysms are caused by a combined action of these three agencies.

What becomes of the immense number of spherules set free at each sporulation? In some cases, probably, nearly all enter red blood-cells, and bring about a fatal issue by destroying an immense number of oxygen-carrying cells. In most instances, however, only a limited number of organisms pass into red blood-cells, starting on a new cycle of developmen, tpossibly under altered circumstances; the majority of the free bodies, following sporulation, probably perish in the plasma from want of oxygen or are killed through phagocytosis or other influences (cells of liver, spleen, and cantihply glands.) We are aware that certain plasmodial types require a certain amount of time to complete their cycle of development; we also are aware of the fact that in most instances of benign type the attacks anticipate—that is, the plasmodia reach the sporulating stage an hour or two sooner than in the preceding paroxysms—which means that parasites either find the soil more favorable or else have increased in virulence. If an antoxine were produced by the plasmodia, as some suggest, would not this in itself stamp malarial fever as a self-limited disease? Would not these parasites, by constant multiplication, produce so much antitixine as to finally overpower them? If the antotoxine theory were maintained, would it not mean immunity, or at least partial protection against further attacks, instead of rendering the system all the more susceptible to plasmodial influence? If an antitoxine does exist, it is produced outside of the human body and certainly not within.

A careful study of the clinical forms of malarial fever combined with microscopical and post-mortem observations has demonstrated the fact that the plasmodia exhibit a marked preference for rich capillary plexuses, where circulatory pressure is at its minimum, the flow of blood constant, and metabolic changes—tissue osmosis—very active, with an abundance of red blood-cells and high temperature. We find plasmodial nests in the plexuses of the spleen, liver, kidneys, lungs, intestines, brain, and spinal cord, giving rise to a multiplicity of symptoms—from a moderate neuralgia to fatal coma—with explosive phenomena resulting from the concentration of the malarial poison.

The existence of the parasite in its primordial state—*i. e.*, *extra corpore hom-*

inis—has not been demonstrated as yet, and is still a matter of conjecture. That the parasite can flourish outside the human body has been demonstrated by exclusion only, and how it gains entrance into the system is still a theoretical point. One person can not contract a malarial disease by coming in contact with an individual suffering from it, which would lead us to suppose that the parasites are not excreted, but destroyed in the system. We do not know how malaria is propagated. It is assumed that it might be spread by drinking contaminated water; this, however, is hardly a source of danger, as the acid in the gastric juice would destroy the plasmodia. It is far more likely that access is gained into the system by inhaling infected dust. It has been domonstrated experimentally that an injection of fresh malarial blood, containing plasmodia in active state, into the vein of a person not suffering from the disease is followed sooner or later by an outburst of malarial disease. The weight of this evidence would tend to prove that infection is dependent on a direct circulatory inoculation, probably by suctorial insects, of which the mosquito is a type; their almost constant presence in the vicinity of swamps and malarious regions is certainly in favor of this theory. Sternberg suggests that the plasmodium, like other amœboid protozoa, may find its normal habitat external to the bodies of its animal hosts, upon the stems and leaves of water plants rather than in the water itself, for when marsh vegetation is submerged by high water malarial fever does not prevail in the vicinity of such swamps. This applies directly to this district, where malaria is less frequent after the rainy season has become well established, and the water-logged areas with their abundant vegetable growth are covered in the water; the danger is greater when the water level sinks, partly exposing the soil. There are at least three swamps known to be malariously infected in this vicinity; they are of rather small size, with the centre partly submerged, while the periphery is water-logged and profusely covered with vegetation. F. W. Fabricius, Acting Asst. Surgeon, U. S. A., N. Y. Med. J., 1899, lxix, 521.

The New Hollow-Pointed Bullet of the English Army.

The adoption of the hollow-pointed bullet by the English Army was because of the lack of penetration of the soft-nosed dum-dum bullet and the lack of stopping power of the full-jacketed bullet; and because it was thought that the hollow-pointed missile would possess both penetration and destructiveness. It was found that the hollow-pointed bullet was more easily deformed than the full-jacketed missile, and therefore caused more extensive wounds. Especially severe are the injuries to organs containing fluid in a closed cavity such as the heart. In comparison with the dum-dum bullet in bony structures, the hollow-pointed possesses about the same destructiveness, but in soft tissue the dum-dum is quite distinctively more severe in its action. The greatest destuctive power of the hollow-pointed bullet is maintained, for soft tissues, up to 400 meters, for bones, up to 600 meters. The penetration of the three forms of bullets is shown by the following: Shooting at 25 meters into pine wood; the complete mantled bullet, penetrated from 100 to 110 cm. undeformed, the hollow-pointed bullet 84 cm. slightly deformed. and the soft lead pointed bullet 20 cm greatly deformed; shooting at 25 meters into beechwood, the complete mantled bullet penetrated 54 cm. undeformed, the hollow-pointed bullet 14 cm. greatly deformed, and the soft lead-pointed bullet 12 cm. greatly deformed. V. Burnss. Beiträge zur klin. Chirurg., Feb. 1899 (Phila. M. J., 1899, iii, 823.)

THE MILITARY SURGEON

A SUPPLEMENT TO THE

NATIONAL MEDICAL REVIEW

UNDER THE CHARGE OF

COLONEL WILLIAM H. FORWOOD,

Assistant Surgeon-General, United States Army.

VOL. I. WASHINGTON, D. C., JUNE, 1898. NO. 4.

Original Articles.

EARLY AID TO THE WOUNDED.

BY DALLAS BACHE,

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There is an impetuous sentiment which in pressing for an immediate help to the wounded on the battle field has, in my judgment, retarded rather than advanced an orderly settlement of this important subject. Human and natural in itself, and the undoubted growth of the increasing attention paid in civil life to a prompt attention of the injured, this sentiment only becomes misleading and dangerous when it finds expression in military regulations, and demands the unreasonable or the impossible.

What is easily practicable to early aid in a crowded thoroughfare, in a factory, mine, or after a railroad accident; or to strengthen the comparison, what may still be possible to a prompt assistance of the wounded after a brief though severe engagement, must, if we clearly understand the altered conditions, be impracticable upon a modern battle field where large forces are struggling under the inexorable purpose of a firce and sustained fire attack. The satisfying mental picture of the swift emergency ambulance with its practiced help cannot, in the nature of things, be multiplied in war. It is difficult, perhaps it is yet impossible, even for those who were familiar with the intense scenes at Gettysburg, in the Wilderness, or at Chickamauga, to produce in prophetic vision the wider zones of destruction and the withering areas of the battle fields to come.

Schematic diagrams of the lines and positions of medical help, showing the regimental service comfortably close to the line of fire, the Ambulance companies in support, and the Division field hospitals in orderly accesibility, are necessary and instructive pictures, valuable guides to thought; but much of the hope expressed in these illustrations is not intelligent, and must be abandoned. It is ideal war, it is ideal medical service, as we would like to have it, as we teach it in the schools; but it is not sane, nor will it commonly be attempted.

I think that we have been lead so far to the front by two motives, the natural desire to relieve the wounded physically at the earliest possible moment, and by a knowledge that they suffer much mentally by remaining in positions where they may receive other wounds. I am also inclined to consider the latter as the

stronger of the two supplications for interference, and as being the most forcible argument for their early removal to places of comparative safety and active assistance. Of this particular value, however, I will speak later on.

Let us assume the simplest battle problem, that of a regiment, 1,200 strong, under active fire and advancing. It has already covered four or five hundred yards since engaged, and has entered upon the most perilous zone of its work. The loss has been ten per cent. of the command. Of these 120 casualties, probably 20 have been killed, 40 severely and 60 slightly wounded. One hundred men, therefore, require or have required medical assistance and one-half of the number need help in their removal. The field of immediate assistance for all, and the distance to be travelled in removal to the first place of security, probably not less than a quarter of a mile, will ordinarily be still under infantry and certainly under artillery fire. The travel must be slow and deliberate, and in the erect position. My conception of the result under these readily apparent conditions, is that many bearers will be disabled, that the wounded will suffer again, and that the medical officer who might have assisted fifty wounded in a place of comparative safety, and freedom from bewildering tumult, will often be sacrificed without rendering any real service, and to an utterly false position.

I realize that it is pleasing to contemplate the immediate or early succor of the wounded, that ample theoretical provision for this aid may be reassuring to all, and finally that this provision is urgently insisted upon by the regulations of some military powers; but the scheme has never been tried under the assured volcanic conditions of modern battle, and it is prudent to anticipate what some may call a brutal conception, and look at it squarely.

The standard scheme for medical service in the field proceeds somewhat in this way. To a regiment is allowed two or perhaps three medical officers, two non-commissioned officers, and eight or ten privates of the hospital corps. This is the regimental service. At the beginning of an action this force is directed to assemble near and to the rear of the regimental reserve, to aid and collect the wounded as rapidly as possible, and to advance or withdraw as the fortune of the day demands. It is supposed to take advantage of protecting features of the ground, but if it is to answer the theoretical behest much work must be done in the open. The Ambulance or Bearer companies are in their turn pushed forward as rapidly as possible to assist and relieve the regimental service, to establish their own dressing stations, and transport the wounded to the Field Hospitals in the more distant rear. They operate in sections over a Division frontage varying according to the exigencies of the battle formation, one or two miles, and to points in the rear, distant from a mile and a half to two miles.

The nature of the ground, water, convenience of roads, presence of houses freedom from fire, enter into this factor. With the most compact front and the shallowest field of work it is plain that to aid, collect, and transport the probable one thousand or twelve hundred wounded of a Division, over this area, is a prodigious undertaking for a day's incessant toil, and that to accomplish it no individual, no strength, no material must be wasted. A greater loss strengthens the conclusion. Night itself is only a respite from the more tumultuous interruptions of actual conflict. The brutal fact must then be plainly

stated. We cannot and should not, unless the circumstances are unusual, unless the sacrifice is clearly demanded, systematically attempt to assist the wounded, dress their wounds, or carry them to the rear, from the line of fire, nor under such fire as may be expected to disable the assistance, and put in peril the ultimate safety of the mass of wounded. Heroic rescue is admirable, and it will be attempted under any restrictions, but it has no part in the most robust scheme of aid upon the battle field.

What is occasionally possible, and less frequently imperative, in hazardous assistance, should only be attempted by diciplined courage, and accepted only as a demonstration of necessity. The account given by Col. Taylor of the English Army Medical Staff of the rapid and successful removal of the killed and wounded of a Japanese regiment of infantry which was surprised upon an open beach by Chinese gunboats, illustrates one of the rare occasions for such gallantry, and is as remarkable for its successful result.

What then are the dangers to the wounded themselves if prompt or early aid is not given on the immediate field? Death from hemorrhage, death from shock, increased infection for all wounds, farther injury from unsupported fractures, greater mortality from wounds of the abdominal viscera, and the fear of additional multilation, are instantly enumerated. This is a serious indictment against dalay, and requires careful consideration.

Undoubtedly of all these impressive pictures the dread of hemorrhage is the most moving, and this is not strange when we reflect upon the space given to the subject of hemorrhage in all formal systems of instruction in first aid, and the insistent attention to methods of control.

A bewildering number of tourniquets have been suggested, and every device of position and pressure carefully illustrated. What is the recorded probability that this armament and ingenuity will be needed ; for unless the peril from bleeding is frequent and great, and this danger can be met by the presence of skill, why should we insist upon a prolonged exposure of valuable assistants among the actual combatants?

In a total of 36,508 gunshot wounds reported for the Army of the Potomac, in the campaign from the Rapidan to the James, May, June, and July, 1864, only 27 cases were included in which a large artery was primarily opened, and in which that was the principal accident, (Circ. No. 6. S. G. O. 1865. p. 38) ; and we are told that out of 245,790 shot wounds during the War of the Rebellion,only 110 cases of primary hemorrhage are recorded, probably less than half of which were in the extremities, where a tourniquet could have been applied. (Forwood, Dennis' System of Surgery. p. 216). Military statistics everywhere support these figures, the British returns of the Crimean War registering only 15 wounds of arteries in 4,434 cases where the history was detailed. Obviously this does not indicate that fatal hemorrhage is rare, but it does insist that controllable hemorrhage is exceedingly infrequent, so rare that it may be disregarded as a special and prominent danger. Injuries of the great thoracic and abdominal trunks, of the large arteries of the neck, shoulder, and upper thigh are either immediately fatal or fatal within a few moments, and would be so were skilled assistance on the spot for each anticipating the injury, and prepared to intervene. It is related that

a distinguished surgeon, during the War of the Rebellion, desiring to learn whether external primary hemorrhage often occurs as the instant result of shot wounds, placed himself near the line of battle, and observed only one case, a soldier struck in the neck, severing the carotid, and fatal before he could reach him. For the rest fatal primary hemorrhage is rare, and this has been the repeated experience of military surgeons of large opportunity. There is comfort and instruction therefore in such emphatic and authorative conclusions as these. "The rarity with which shot injuries, complicated by serious arterial hemorrhages, present themselves to surgeons at the stations for first dressings is an experience that repeats itself in every campaign;" and, "The dread of primary hemorrhage upon the battle field is confined to the inexperienced."

With delayed primary, or secondary hemorrhage, we have not much concern, within the special consideration imposed here, for they will occur at periods when, under all but the most exceptional circumstances, the wounded are already under observation, and the usual precautions have been taken.

How is it then with the importunity of shock?

As we might anticipate, and as an analysis of the record of fatal shock readily discloses, this severe mental and physical depression follows chiefly upon penetrating wounds of the abdomen and thorax, upon extensive comminution of the long bones, especially of the femur; and after such grave lacerations as are made by shell and the larger missiles.

What is the proportion of such regional wounds to the whole mass of traumatism?

The records of the War of the Rebellion, dealing with 245,790 shot wounds give to penetrating wounds of the chest a percentage of 3.36 to the whole, to penetrating wounds of the abdomen 1.51 per cent., to fractures of the hip joint 0.16, and to fractures of the femur 2.74 per cent. This total of gravity amounts therefore to 7.77 per cent. We have no means of telling the frequency of serious shock in this multitude of cases, but as some indication for approximate computation we may accept the figures given by Longmore, who records that out of 22 cases of fatal shock, in 13 the abdomen had been penetrated. The remaining nine included 2 wounds of the pelvis, 3 of the femur, one extensive mutilation of the lower face, one of the chest, and two cases of grave and multiple injuries from an explosion of gunpowder. No doubt it is desirable that such patients should receive assistance at an early moment, for careful stimulation, for the application of artificial heat, and for other recognized methods of restoration, but the mere recital of all this procedure demonstrates the inherent difficulty, and if there be added to this the absolute and recognized danger to the patient of handling and removal, one can see that there are many and weighty mitigations of an apparent evil.

When we enter an assertion of the danger of increased infection of all wounds from delay in their prompt protection on the battle field we must be ready for a considerable controversy, for it is yet a vexed question as to how far it is desirable to entrust the primary dressing of wounds to any but the skilled hands to be found first at the advanced stations of relief. Objection is made not only to the careless handling which wounds will receive from unskilled aid, but the argument is very strong for securing as much permanency as possible in the primary dressing, in order to avoid frequent disturbance, and to permit the patient direct removal to

the Division Hospital without halt at intervening stations. Under this conception, which has the approval of military surgeons of experience, the bearers would bring the injured as rapidly as possible to the rear, "without applying any dressings except in case of evident hemorrhage." The surgeon is the high priest of cleanliness, and an immense material has been provided for his use, but he controls only the wounds inflicted by himself, and may reasonably prefer to inspect and direct the dressing of injuries with the full information of sight and touch, and without previous interference. And too we must recognize the experiments of Karlinski in this debate as evidence upon the frequent infection of wounds at the time of reception, the pathogenic bacteria, coli communis, streptococcus, and staphylococcus aureus, being carried upon fragments of the clothing into the wounded track, with local and systemic damage. These experiments were conducted with great care, and explain not only the want of uniformity in results under apparently similar conditions, but tend to make us less confident in the primary antiseptic dressing and less exacting as to its early application under supreme difficulty.

The remaining plea for early and active interference within the fire zone may be more briefly considered. It would be undeniably grateful to relieve the pain of fractures by early adjustment, to remove at once all those who have received penetrating wounds of the abdomen, and give them such advantages as might follow upon immediate determination of the case, or operation for relief, to shelter all the helpless wounded from farther harm; but much suffering is inevitable, and a choice between well understood evils must be made. The estimated gain to the few must be weighed against the known gain to the many. In this wise, and only in this wise can medical service be prudent, deliberate, and effective upon the battle field. Tumultuous zeal, and procrastinating caution are equally out of place, in any disciplined medical force. Even delay must be organized. The medical service of an army should go upon the field with the same preparation of detail, the same accurate provision of material, the same nice assignment of personnel and parts, as a battery of artillery, or a battalion of engineers. It should be handled tactically, so to speak, and with foresight for the day. It has, in my judgment, no part in the battle front, no business among active combatants. Within the discretion of the directing medical authority, such forward work may be done as will not heedlessly imperil the men and materials. If a bearer be struck it is an appreciable loss to the wounded, if an ambulance or an animal be disabled we are so much the less competent to do the assigned work. Such losses will be incurred, they are inevitable, but they are the calculated losses, within the margin of safety, and are not calamities which we invite.

The brief illusions to the organization and equipment ordinarily provided for the care of the wounded are, perhaps, all that naturally pertain to a paper like this, and all that are necessary to its development upon a particular line.

There are, however, some additional views and suggestions which may have a special interest at this time, and which seem to find a natural home here. We abandoned, some time ago, in deed if not in word, the system of regimental medical relief which was expressed by the company bearers. This was a wise, and in fact a compulsory move, because it did not seem rational to arm and instruct a soldier, and at the moment when he could be of service in the line of battle send

him to the rear with a litter. Succeeding this there was an effort to instruct all soldiers in certain elements of first aid, with a view to making every one helpful to himself and others. However attractive this hope may have been in theory, the results in practice proved unequal and on the whole disappointing, so that some modification and restriction of this extension of training will be necessary, probably in the line of assuring a limited but useful proficiency in elementary aid among commissioned and non-commissioned officers, the two classes capable of intelligent direction, while confining the function of the soldier mainly to a useful service of the litter. The advantage of this method is that while it provides a large and immediate reinforcement to the trained medical corps, for provisional aid and bearer work upon the close of a battle, when the need is greatest, it does not contemplate or imply the withdrawal of a single musket from the active front. This, of course, cannot be called a regimental medical provision, and for that we must look probably to experience. At present we are without a distinct recognition of and provision for this purpose, although it is not difficult to see in the family aspect of a strictly regimental medical personnel, of adequate strength, a value beyond any assistance that is likely to be or can be rendered by a purely divisional unit, such as a Bearer or Ambulance Company, directed by a central authority. The objection to this regimental provision is that a strong force is not always sufficiently employed; the advantage is distinctly that of an interested body of men familiar with its local work, always at hand, and of great adaptability. As we reduce this provision we must increase that for the Ambulance Companies, who must be correspondingly advanced and dispersed at the risk of serious embarassment.

The battle field is not a favorable place for chance and indecision, complex methods, or sudden improvisation. As far as human foresight can provide, material and equipment should be at hand, and always available. There will be ample opportunity for the versatile and ingenious, but these qualities should be employed as far as possible in anticipating an emergency, and as little as possible to mitigate a predestined failure. It will require the best of trained faculties to have men and supplies, Ambulance Companies with their ambulances and litters, the pack train, and hospitals, in position for the battle when it opens, and so ordered afterwards as to be fully effective. Enthusiasm alone cannot accomplish this, and purely professional ability will fail in this complex administration among interests that cannot wait, and will not be silenced or deceived. There is no body of men upon the battle field that requires more sustained and disciplined courage, more training in perfected self-reliance, a greater endurance under prolonged strain, than the officers and men of the medical service. These are not the creations of a theory, but of hard, unremitting, intelligent work.

Reviews.

HANDBOOK FOR THE HOSPITAL CORPS OF THE U. S. ARMY AND STATE MILITARY FORCES. By Charles Smart, Lieutenant Colonel and Deputy Surgeon-General, U. S. Army. Wm. Wood & Co., New York. $2.25 net.

In his dedicatory letter to the Surgeon-General of the Army, the author of this handbook mentions that the first edition was prepared with the idea of assisting the members of the then newly organized hospital corps to meet the requirements of the high standard of efficiency demanded of them, and that the book has answered its purpose is proven by the character of the examination papers filed by the candidates for the positions of Steward and Acting Hospital Steward. The present, revised, edition appears at a most opportune time. It is divided into three parts: Part I. treats of Hospitals and Hospital Duties; part II. of Anatomy and Physiology, and part III of the Special Duties of the Hospital Corps. The field covered is a large one embracing instruction as to active service in the field; the sanitary care of camps; the management of accidents; the recognition and treatment of shock; the peculiarities and care of inflammation, of wounds, of hemorrhage, of fractures and of dislocations; disinfectants; the management of infectious diseases, and finally the elements of pharmacy and cookery, etc.

The arrangement of the book as a whole, the system of paragraphing employed, the analytical index to paragraph numbers and, most of all the author's style, which is a model of condensation and lucidity, make the handbook at once clear, concise and adequate.

While it is a pleasure for us to commend, above all others of a like description, this work by a writer so distinguished in many various fields of science, the success that it has already achieved, without words from us, would furnish abundant evidence of its value. We are quite sure that this handbook will not only be of benefit to the men who enlist in the Hospital Corps of the Army under present war conditions, a hope expressed by the writer in his prefatory note, but that it will be of immense and lasting service to others, and more than fulfill the modest expectations of its eminent author.

YELLOW FEVER IN THE WEST INDIES. By Izett Anderson, M. D. London, H. K. Lewis, 1898.

The author of this small volume has had an experience of over thirty years with yellow fever as it is met with in the West Indies, and while, as he justly remarks, the lack of personal acquaintance often leads to grave errors especially in the diagnosis of this disease, yet his brief and lucid account, dealing almost wholly with the practical side of this dreaded scourge, will be of great service to those who may be called upon to recognize and treat it.

After describing the high rate of mortality among the European residents in the West Indies in the earlier part of the century, and the beneficial effects which have ensued upon better methods of living and improved personal and public sanitation, he discusses in more detail the etiology, symptomatology and treatment of this affection. He thinks yellow fever is especially apt to occur about wharves where coal is stored, in coal ships or those with foul bilges, or such as are ballasted with earth, tidal mud, or are laden with green wood; and he agrees with many American observers that etiological importance should be placed upon recently turned earth and the cleansing of canals and ponds. The disease may occur in hot or cold seasons and in wet or dry weather, quite independently of altitude, and the most usual exciting causes are exposure to the sun and a chill, supplemented by excessive fatigue and such emotions as fear, anxiety and depression. Although the disease may be contracted by those who have been born and have lived in the climate in which the conditions necessary for its genesis exist, yet such as have recently arrived, especially from a colder climate, are particularly liable to infection. The blacks are, however, less likely to contract yellow fever than the whites. Perhaps because of greater exposure, adult males, notably European

soldiers and sailors, are more often affected than females.

Though yellow fever, the author says, is by no means uniform in its manifestations, yet there is a group of quite characteristic symptoms that are fairly constant. There are too quite distinct stages in an attack: 1st, the febrile stage, and 2nd., the stage of calm or depression. The patient complains of nothing up to the moment of the attack, which begins with a sudden and severe headache, pain in the back and limbs, hot skin, chilly sensations, and not seldom, vomiting. The character of the fever is to be particularly noticed: there is a rapid rise to the maximum, and after a short period of elevation, there follows an almost equally sudden fall to normal or subnormal. The author lays great stress upon the condition of the urine both in diagnosis and prognosis. Unless the disease is aborted, he asserts that he has never considered a case as one of genuine yellow fever unless albuminuria existed, and in an experience of over thirty years, he has never known a case of yellow fever prove fatal or black vomit to appear without albumin being found in the urine. Albumin usually appears on the second or third day, reaches its maximum on the fifth to seventh day and seldom disappears for several days, it be may be weeks, thereafter. Tube casts, mostly granular, are almost invariable. In diagnosis the following points should be recalled: Rapid rise of temperature, aspect of severe illness, intense supraorbital headache, injected and "ferrety" eyes, marked cutaneous hyperemia, red tip and edge of tongue, congested fauces, epistaxis, epigastric tenderness and persistent vomiting. At the beginning of the second stage there is a most deceptive period of calm This is followed by invariable albuminuria, yellowness, hemorrhages, slow pulse, apyrexia, red tongue, epigastric tenderness, irritable stomach and black vomit. The author maintains that he has never seen a case of pernicious malarial fever with albuminuria.

The treatment especially commended by the writer, which has been tested on a very large scale in the West Indies, and which he believes, if begun early, aborts, or at least mitigates the severity of the disease, consists in the administration of 20 grains of calomel and 24 grains of quinine, repeated once or twice in the first 24 hours and followed by castor oil or a saline purge. This plan should never be followed if the slightest trace of albumin be present in the urine. In the event of other medication being deemed desirable and there is no excessive diarrhea, begin with 6 to 10 grains of calomel in pill form with Pil. Rhei Co. or Pil. Colcynth et Hyos. with a draught of iced water, for all food and medicine in yellow fever the writer believes should be administered ice cold. This is followed in 3 or 4 hours by a saline purgative, (magnesia sulph., magnesia carb., potass. bicarb., and water) and repeated every third hour until the bowels are freely moved. Then the steady administration throughout the disease of carbolic acid and bicarbonate of potash in effervescence with fresh lime juice, watching the urine carefully. Should this not keep the black vomit in check, ergot, creosote and soda, acetate of lead, tincture of the perchloride of iron, etc., may be given.

We regret that space does not permit us to quote further from this excellent volume in which the experience of a lifetime is condensed into a few pages, and we must pass the whole important subject of nursing, diet and stimulants. We close with the following quotation: "Dr. Sternberg, an American author of great and deserved repute in yellow fever, strongly recommends the following: Sodæ bicarb. gr. 150; hydrarg. perchlor., gr. ½; aquæ, oz. 40. Mix. Sign. Three tablespoonfuls every hour to be given ice cold. He reports having met with great success in the use of this medicine. Like the mixture I have used for so many years it consists of an antiseptic and an alkali combined and both are given well iced."

PROMPT AID TO THE INJURED. By Alvah H. Doty, M. D. Appleton & Co., N. Y. 1898.

This book is designed as a manual of instruction in the principles of prompt aid to the injured and includes a chapter on hygiene and the drill regulations for the hospital corps of the regular army. It is, indeed, a difficult task to give to non-medical persons information which

will properly instruct them to cope with emergencies without encouraging them to usurp the functions of the surgeon. The author does not pretend to have accomplished this task; but he has generally succeeded in his endeavor to explain each topic in a simple manner and when medical terms are used he has also given their lay synonyms. Even so, we do not believe the ordinary member of the hospital corps will, unaided, be able to thoroughly digest the anatomy and physiology taught in the first sixty-seven pages of the book. The chapters on fractures, wounds, contusions, bandaging, and antiseptics treat their subjects in a clear and concise manner as do also the chapters on the control of hemorrhage, poisons and poisoning, and hygiene, but we doubt the probability of their being understood without the aid of an instructor. The part devoted to the transportation of the wounded is well illustrated and the text is amply explanatory.

Selections.

The Causes of the Morbidity Among the Spanish Troops in Cuba.

The author describing the medical aspect of the Cuban campaign, enumerates the conditions likely to influence the health of a soldier in the invading army. These are his age, expatriation from his native land and the change from an individual and sedentary to a collective and active existence. By Spanish law all young men who have attained the age of 19 are required to enlist, so that the majority of troops sent to Cuba during 1895 and 1896, were from 19 to 20 years of age, a period of life at which the organism has not attained its complete development, is in process of evolution and, therefore, particularly exposed to disorders of nutrition and specific infectious diseases. This was shown by the fact that there was far less malaria and yellow fever among the battalions of the reserves sent at the beginning of the war and composed of men from 25 to 30 years of age, than among the younger men sent later. The effect of change of climate and of expatriation among the newly arrived troops was so marked that, during the first few days, companies of 250 men were reduced to 200 and 180 (from 20 to 25 per cent.), and the first 15 to 20 days sufficed to reduce the fighting force by one third. Interesting is the fact that during the Vuella Abajo campaign, the reinforcements sent from the eastern and central portion of the island to Pinar del Rio, by traversing certain yellow fever foci, imported the disease with them among the troops stationed at the latter place. Subsequently typhoid fever developed as the result of crowding, movement and fatigue under unfavorable conditions, constituting decidedly the principal element of mortality. All hospital reports show that the immense majority of cases came from the camps and marching columns, and excluding places in which the fever was endemic (as Pinar del Rio, Bahia Honda and Guanajay), the troops stationed at garrisons suffered relatively far less than those on the march. S. (P.) Patogenia de los medios militares en la actual campaña de Cuba. Med. mil. espãn., Madrid, 1897-8, iv, 145.

Morbidity and Mortality Among the Spanish Troops in Cuba.--Carezo.

In a report upon the condition of the Spanish forces in the Island of Cuba, Dr. Angel de Larro Cerezo, Surgeon-General of the Royal expeditionary troops, remarks that the difficulties in the discharge of medical duties is greatly increased when, as in Cuba, troops are scattered over a wide territory which is unprovided with roads, and in which yellow fever and malaria are endemic. Of the 200,000 soldiers landed during the year 1896, 50 per cent were invalided in the first two months of their arrival chiefly by endemic diseases and exhausting marches. Early in 1895, the construction of hospitals was begun in every province of the island, and this work was continued until in 1897, there were 45,685 beds at the

disposal of patients. The following tables will give a summary of certain features of the report. *It should be noted, however, that these statistics are based solely upon military hospital reports and take no account of those not sufficiently ill to be admitted to hospital nor of those who were treated or who died in civil hospitals, private residences or in villages away from military centres.* [Italics ours, Ed.]

Morbidity and Mortality from March, 1895 to June, 1897.

	Total admissions	Total deaths.	Cases of yellow fever.	Deaths from yellow fever.	Cases of wounds.	Deaths from wounds.
From March to December, 1895	49,485	3,200	7,034	.....	11,902	1,989
From January to December, 1896	232,714	10,610	23,580	.....	7,270	363
From January to June, 1897	201,247	3,691	4,636	.....	2,645	160
Total	483,446	17,501	35,250	11,347	21,817	2,512

Morbidity and Mortality from June 30, 1896 to June 30, 1897.

	Malarial fever.	Dysentery.	Typhoid fever.	Tuberculosis.
Cases	79,552	7,393	2,903	2,381
Deaths	515	811	576	299

The medical war organization in Cuba. Med. Press and Circ., 1898, n. s., lxv, 464.

Gun-shot Wounds Among the Spanish Troops in Cuba.--Granda.

The author describes the effect of modern weapons in the present Cuban war. The projectiles most used by the insurgents were in order of frequency the regular Remington bullet, explosive bullet, Mauser bullet and lastly missiles from the Relámpago repeating rifle. Wounds from the Mauser bullet gave the most favorable prognosis; those from the Remington repeater varied in gravity in proportion to the distance from which they were fired. When the long bones were struck they were generally comminuted; still the balls from the repeaters frequently did not cause fracture owing to lack of striking energy and absence of resistance. The balls being of uncoated lead and fired at relatively short range, accounts for the great laceration of soft tissues constantly produced by these missiles. The explosive bullets produced extensive comminuted fractures and bruising and laceration of the soft parts—wounds attended with the gravest prognosis. The deficient striking energy was of no special advantage to those fired upon, since this was generally done at point-blank range from ambush. Wounds from the machete were, strange to say, the least dangerous of all, though usually multiple and extensive in character. The author cites a case in which a soldier sustained three frightful gashes, one transverse taking in both parietal eminences and traversing the entire thickness of the bone; another fractured the right temporal bone, and a third, passing through the left shoulder, fractured the scapula. During treatment the man passed through an attack of yellow fever, yet he recovered, though naturally incapacitated for further service.—Gonzales Granda (J.) Consideraciones derivadas des casos clinicos observados en la campaña de Cuba. Rev. de san. mil., Madrid, 1898, xii, 49.

Marching and its Place in the Training of a Soldier.--Austin.

A soldier who cannot shoot is useless and an incumbrance to his batallion. The same is true in an even greater degree of a soldier who cannot march—he is an incumbrance, and in an enemy's country, a positive source of danger. The large number of men who fell out during the New Forest maneuvres in 1895, brought into prominent notice the serious defect in training under which the army labored and pointed to the necessity for fullest inquiry. The result was the institution of a system of train-

ing in marching, commencing with short distances and culminating in a consecutive six days march covering 80 to 100 miles. In battles of the future, celerity of movement and rapidity of concentration at a given point will be more potent factors of success than ever before, and may even decide the result of a campaign. Hence the mobility of troops must be brought to the highest effective point, that they may not only cover a considerable distance, but do so without undue fatigue, making a subsequent engagement with the enemy or even a pursuit possible Comparing the marching powers of the British with that of Continental troops, we find that 20 to 25 miles in marching order is, on the continent, not considered a notable undertaking. The inferior stamina of the British recruits cannot be attributed to poor feeding and hardship in the classes from which the recruits come. We must look for the fault elsewhere, and determine in what way the marching shortcomings of the British recruits can be removed and how their marching power can be developed to the fullest extent.

Disabilities Incidental to Marching: 1. Foot Soreness. Almost every case of foot soreness is attributable to two causes, viz.: defective or badly fitting boots and socks, and want of cleanliness. Innumerable experiments have been made, but the perfect military boot has not yet been invented. The British infantry boot has been generally condemned on account of its hardness and want of elasticity in the sole, and its excessive weight. This hardness is due to improper treatment of the leather by the soldier in his effort to secure a high state of polish on the shoe. An occasional rub with castor oil will do much to prevent this, but cast iron stiffness of sole and excessive weight demand serious consideration. The present service boot also contracts the front part of the foot, and the exaggerated square toe of the German boot is better. The present seamless sock is good but great care is required to keep it in condition. Holes or bad darning quickly produce blisters. The greased wrapper is probably better suited to campaigning than the woolen sock. The present gaiter is universally condemned. It presses on the instep and heel, galling and blistering them, is ugly and injures the trousers. Want of cleanliness is a fruitful source of foot soreness. Soldiers on the march should have at least three pairs of woolen socks, and when halted for the night should bathe their feet and change their socks. Should there be a blister, if the part of the sock which the blister touches be thoroughly soaped, pain and inconvenience are done away with. A distinct advance will be made in the education of the soldier when instruction is given in the care of the feet, and it would be a good idea if a certain number of men in each battalion were to receive some training as chiropodists. It is an open question if the application of fatty dressings to the feet before marching is of advantage. The Germans, during the war of 1870-71, are said to have used an ointment of one part of tannin to 20 parts of zinc ointment. Common yellow soap is most grateful to a tired foot, and soaping outside of the sock is recommended by some. Well fitting boots and dry clean socks prevent a great deal of the incapacity for marching. 2. Exhaustion. Man to man the British recruit is as good as his Continental confrère. To what can we then attribute his defective marching power? The manner of conscription in England admits recruits who are up to the standard of height and weight but are mere boys, and they cannot perform the duties of men. Moreover it is very doubtful if the present food ration is sufficient in quantity. A sufficiency of good food has a marked effect upon the marching powers of the soldier. The present bread ration should be increased to 1 and ½ lbs. per diem, the 12 ounces of meat should be free from bone, and a small daily ration of cheese should be provided. As regards alcohol, under certain circumstances and if food be taken at the same time, it has an excellent effect in preventing exhaustion. The weight carried by the British infantryman is about 60 lbs., that of the French and German from 65 to 70 lbs. The present British infantry equipment leaves much to be desired. The "valise" according to an official report, is apt to

wobble, to become badly balanced and checks lung expansion. Moreover, the whole weight which should be carried on the shoulders is distributed, and the heaviest part drags on the loins. The French equipment is carried on the shoulders, and it may be put on or taken off in a moment and without assistance. For rapidity of movement, of course, the soldier must be lightly weighted, and yet it is difficult to see in what direction a lightening of the present equipment is possible, except by substitution, wherever possible, of a lighter metal for that now used in accoutrements and an abolition of that which is simply ornamental. As to the influence of clothing upon marching power, it should be noted that the helmet now in use is heavy (14½ oz.), leaves the temples exposed, is not low enough to protect the neck, but is too low to permit the use of the rifle while lying down. The Fusilier busby is too heavy (24 oz.) and the Highland bonnet has a large surface exposed to the wind, but is in many respects an ideal head-dress, being light, well ventilated, etc. The solution of the infantry head-dress problem lies in some modification of the large soft felt hat worn by Colonial troops. The nearest to perfection on the Continent is that of the Italian bersaglieri if the material were grey instead of dark green. The present frock worn in marching could best be improved by altering its shape to that of a Norfolk jacket without the band and with four outside pockets. The present trousers are too tight for field service. Some modification of the knickerbocker would be the best. These with a modified Highland spat, Norfolk jacket and felt hat would go far to solve the problem of a suitable dress for campaign purposes. Causes which have a debilitating effect upon young soldiers are over indulgence in drink, sexual intercourse and tobacco. Cigarette smoking has increased to an incredible degree among young soldiers and tends to disturb digestion and circulation. When well regulated, marching is of benefit to the soldier physically, he gains weight, his face becomes ruddy and his muscles become firmer. If, on the contrary, marches are injurious, there is loss of weight, muscular flabbiness, a thin worried look and anæmia. Under the present system of enlistment, where recruits have to be accepted while in a state of immaturity, training in marching must be gradnal and carried out throughout the whole year. The habit of singing on the march should be encouraged to the fullest extent. There should always be sufficient lavatory accommodations, inspection of the feet and foot gear should be frequent and careful, and an increased ration should be supplied.—Austin (H. W.) Surgeon-Captain, Army Medical Staff. Marching and its place in the training of a soldier. Army M. Dep. Rep. 1896, Lond., 1897, xxxviii, 448.

The Use of Formalin in the Care of the Feet of Troops.--Gerdeck.

Formalin, on account of its chemical peculiarities, seems to be a medicinal agent especially well adapted for use in the care of the feet of soldiers. It is germicidal, deodorant and tans the skin preventing putrefaction and imbibition. It has been found useful in sweating feet especially if the odor be offensive, and increases the marching power of troops by preventing local hypersecretion and maceration of the epidermis. When applied in concentrated solution it stops perspiration at once, producing no constitutional injury whatever. After three or four applications even artificial means (heat and moisture) fail to induce secretion, and on the average, two or three weeks elapse before such artificial stimulants, or active field service (woolen socks being worn), lead to a return of activity in the sweat glands. The best method is to pencil undiluted formalin over the feet morning noon and night and the next morning, though the more delicate skin should be treated but twice instead of four times. The boot is then disinfected by dropping into it 4 to 6 drops of the same fluid; this deodorizes the boot and preserves the leather. Formalin thus applied is not only an excellent prophylactic, enabling soldiers who habitually suffer from sore feet to march without difficulty, but by hardening macerated tissues, blisters and their surroundings, makes walking not only possi-

ble but painless.* Gerdeck. Stabsarzt II Bat. 8 Rhein. Inf. Regts. No. 70. Ueber die Anwendung des Formalin bei der Fusspflege der Truppen. Deutsche mil.—ärztl. Zeitschr., Berl., 1898, xxvii, 165.

A Stretcher which will do away with Emergency Fracture Dressings.--Nicolai.

The new rifle, it is almost certain to assume, will lead in future wars to an increase in the number of the wounded, and an absolute, though not necessarily a relative augmentation in the number of severe wounds and especially of gun shot fractures of the leg. The character of the injuries produced by the new mantled bullet will make it more than ever desirable that the wounded receive surgical assistance as speedily as possible. The work of the surgeon will, therefore, be increased quantitatively as well as qualitatively. The idea of sending surgeons into the fighting line, as is provided for in the Sanitary Regulations, as well as the removal of the wounded therefrom during battle, is impracticable, the danger being far too great, and it will be necessary to wait until the firing line has advanced at least 200 to 300 m before those in the sanitary service can venture forward, even under cover or from the flanks, to rescue the wounded. On these grounds it is recommended that the troops shall be provided with numerous bearers who are sufficiently well instructed, after creeping cautiously up to the firing line, to employ means necessary to control hemorrhage and to place fractured limbs in correct and comfortable positions. For many reasons the application of splints under such conditions would be impossible. Even if it were feasible to supply the bearers with all the necessary varieties of apparatus, the proper dressing of gun shot fractures requires a high grade of knowledge, care and coolness. From this it follows that, instead of waiting, the stretcher having been brought to the side of the injured man, until elaborate dressings are applied or the shape of the stretcher has been adapted to the nature of the injury by means which are recommended, but never happen to be at hand, it is better to have at the start a stretcher which can be readily employed to meet any indication called for by the nature of the injury. Such a means of transport must meet many indications, but the essential feature of them is the securing of rest; and it must be remembered that rest for the injured part is most complete when the whole body is at rest. The end to be reached, therefore, is to determine in what position the body can be placed so as to secure the highest degree of general muscular relaxation. If a man lie flat on his back on an even surface, the back of the head, shoulders, buttocks and heels touch, while the small of the back and hollow of the knee are unsupported. This position, all will agree who have tried it, is not by any means restful. If however the knees are slightly flexed and supported in that position, the hollow under the back disappears, the muscles of the pelvis, thigh and leg are relaxed, and the whole body finds itself in a position of complete repose. The author repeats what he said in 1878, that, neither in complete extension nor in complete flexion, but in a medium between these lies the most perfect relaxation of antagonistic muscles and ligaments, and practical experience, confirming this dictum, gives us the basic principle for the construction of a means of transport for the severely injured. In the case of a fracture of the middle or upper half of the femur, the patient lying on the back on a flat surface, the upper fragment is lifted, abducted and rotated outward; the lower fragment sinks and is drawn upward toward the trunk. While transport of such an injury in extension prevents damage of the soft parts, if counterextension be not employed, the effect of extension soon becomes nil. The main difficulty remains—in the extended posture reposition of the fragments in their normal relation becomes impossible. To overcome this, a position with flexed knees is improvised, knapsacks, coats, bundles of straw etc. being used for support, and a fairly satisfactory result is arrived at. But in addition to the imperfections inherent in this method, there is a decided increase in the weight

*We cannot believe that the author means the ordinary commercial formalin, for this would be far too strong for the purpose indicated. A diluted solution, however, would, in all probability be very efficacious.—Ed.

to be carried by the bearer. We, therefore, need a stretcher that can be made to correspond theoretically with the position desired and practically is adapted for transport. To meet this end, Stanelli devised his "Triclinium," which though originally intended only for the transport of those suffering from fractures of the femur, now serves as an excellent starting point for the construction of a stretcher for the conveyance of those severely injured in other ways. In 1875 the author had such a "triclinium" made, and tested it in a number of severe injuries, especially in fractures of the thigh, but it was too heavy and was otherwise unsuitable for service in the field. Later he devised a stretcher constructed on the same principle, which was described in the Deutsche mil.—ärztl. Zeitschrift for 1878 and 1880, and is now in the Museum of Hygiene in Berlin. This stretcher or chair met all the indications but was heavy and complicated and therefore unsuitable for field service. Following up the same idea, the present model was devised—a stretcher 2.50m long, 60cm wide, made of light steel tubing covered with canvas. The stretcher (in shape quite like a steamer chair) is composed of two parts, one corresponding to the back of the chair, the other to the seat, leg piece and foot board. It is supported by long curved arms, which rest upon the ground, the chair being swung between them, or are used as handles to carry it. The parts are readily adjustable and the portion upon which the patient sits may be lengthened or shortened. By elevating the rear ends of the bars, the person occupying the chair is brought into a more erect position, and by a corresponding elevation of the forward ends, the position becomes a reclining one. The whole stretcher weighs 15kg. A wounded man is quickly and easily placed upon it. And since it is in reality a suspension apparatus, and, on account of the material of which it is made, all jarring in transport by hand, wagon or rail is avoided. The greatest advantage of this stretcher is that it does away with the necessity of the bearers applying immobilizing splints and dressings which, as usually applied, are as apt to be harmful as beneficial.—Nicolai (H. F.) Oberstabsarzt I. Kl. Ueber die konstruktion einer Trage, welche das Anlegen von Nothschienenverbänden erspart. Deutsche mil.—ärztl. Zeitschr., Berl., 1898, xxvii, 145.

Instructions to Russian Military Recruiting Officers.

If the recruit is of the proper height and it is not at once apparent that he is unfit for military duty, he is to be stripped and submitted to a searching examination. Beginning at the head, note its conformation and that of the face, and examine into the condition of the eyes, nose, mouth, throat and neck, thyroid gland and lymphatics. Follow down the spinal column, see if the chest be well formed and proportioned to the size of the body, investigate the abdomen and pelvis, and look for hernia, signs of gonorrhea, etc. Next, the extremities, attention being paid to muscular development, strength and sensation and the free mobility of joints. Examiners should remember that anomalies, diseases and injuries may exist and be concealed or be feigned and falsely declared to exist. In cases where concealment or simulation is suspected, the Ministry of the Interior is to be notified and the recruit sent to the nearest hospital for observation extending over one month or longer. The report of the hospital authorities shall be accepted as final. In cases of alleged epilepsy, where there are no outward signs of the disease and in the absence of a medical certificate, the recruit is to be accepted and sent to a hospital for three months' observation. Upon completion of the physical examination, the examining physicians shall report in writing to the military commission whether, in the case of each recruit, he is "fit," "fit only for non-combatant duties," "fit for standing army or reserve or unfit for either or both," "subject to observation," and in the event of unfitness, must signify the cause thereof. Should there be a difference of opinion between the examining physician and the recruiting commission, the recruit is to be sent to the hospital

for further observation. If at the time of his examination, the recruit is being treated for a disease or is subject to its recurrence and presents a medical certificate to that effect, he may, at his election, postpone military service for one year.

A. Diseases and infirmities which render a recruit forever unfit for military service: Scrofula (with enlarged glands, ulcers and disturbed nutrition), excessive obesity, chronic rheumatism, elephantiasis, leprosy, lupus, psoriasis, ichthyosis, prurigo, benign tumors exerting pressure on important organs or preventing the wearing of clothes, shoes, etc., malignant tumors anywhere and in any stage, cold abscesses with signs of necrosis, old syphilitic, scorbutic or tubercular ulcers or fistulæ of deep organs, cicatrices interfering with movement of limbs or with wearing clothes or shoes, caries or necrosis of bones, aneurysms, epilepsy and hystero-epilepsy, paralysis and paresis and other hindrances to movement of organic, central or peripheral origin, St. Vitus' dance, paralysis agitans, trembling of entire body or any part of it, hysteria or neurasthenia, idiocy, insanity or imbecility, progressive facial hemiatrophy and myxœdema, incurable neuritis or neuralgia, fungoid mycosis and sarcomatous papilloma, loss of any part of the cranial bones, inability of the eyelids to cover the eyes, ectropion, entropion chronic inflammation of the eye due to irregular growth of eyelashes, cicatrices of conjunctiva with chronic inflammation of cornea, adhesions of eyelids to each other or to eyeball, lachrymal fistula, exophthalmos, Basedow's disease, anterior staphyloma of either eye, blindness of either eye or defective vision, pronounced strabismus of right eye, ptosis, nystagmus, paralysis of ocular muscles, closure of both auditory meati, destruction partial or complete of one or both tympana, running from ear accompanied by pathological changes in structure, deafness and inability to hear a low voice at three or a loud voice at nine yards, structural alterations and deformity of nose, polypi of nose or naso-pharynx if hemorrhagic or interfering with breathing or swallowing, abnormalities of mouth interfering with chewing, swallowing or speaking, severe stammering, mutism and deaf mutism, salivery fistula, extensive harelip, loss of 10 teeth in both jaws or 8 teeth in one or marked caries of others, torticollis, goitre, organic disease of larynx or bronchi, stricture of esophagus, deformed or insufficiently developed chest, consumption, chronic pneumonia or pleurisy, chronic bronchial catarrh, emphysema, asthma nervosum, organic disease of heart, pericardium, aorta or pulmonary vessels, organic disease of abdominal or pelvic organs, hernia, prolapse of rectum, diseases and abnormalities of the genito-urinary apparatus, retention of testicle, congenital hydrocele, varicocele, curvature of spine, malformation of bones, joints and cartilages, loss of carpus and tarsus, want of either thumb or of right index finger, two or more fingers wanting on either hand, complete immobility of one finger, want of large toe or of two toes or immobility of large toe or two other toes, supernumerary fingers or toes or other malformations interferring with motion.

B. Diseases and deformities which do not preclude drafting into service as noncombatants: Incomplete adhesion of eyelids not interfering with vision, slight diminution of acuity of vision, loss of one or both concha, nystagmus of right eye, unpronounced harelip, prolapsus ani if no tenesmus and mucosa normal, injuries and abnormalities of hand or foot not interfering with motion sufficient for noncombatant duties.—Russia. (Instruction to recruiting office for guidance in examining the constitution and health of persons called to perform military service.) Voyenno-med, J., St. Petersb., 1897, exc., off. pt., 110.

The Training of Horses for Forced Marches.—Kulgacheff.

Exercise and proper feeding are the essential elements in the training of horses for forced marches. The commander of each troop should select the four best horses, with an additional one as a reserve, and they should neither be aged nor less than five years old. The training should begin with one half hour's work, walking and trotting alternately, and one quarter hour should be

added daily and the trotting periods lengthened, until the horses can make seven miles an hour for two hours, breathing easily and sweating but little. In two weeks' time it will easily be determined which horses can stand forced marching and a record of them will be kept. The burden will be daily increased until the horses will be able to carry the load for heavy marching order. A proper training is likewise necessary for the men who are to ride these horses. In order that horses may be prepared to make seventy miles in one day on forced marches, allowing ten to twelve hours for rest, it is sufficient to train them up to the point of making thirty-five miles in five consecutive hours without stopping. At first, in the camp, fourteen miles are made in two hours. Later, the horses are taken to the fields and highways, the length of trotting periods is increased, and three and one half miles are daily added, so that at the end of six exercises the animals are able to make thirty-five miles in five consecutive hours of continuous riding. The horses should be allowed to rest or alternate, consequently the entire preparation will occupy fifteen days. In the beginning of the training the pace should be: First, walking for three-fourths of a mile, then trotting for from one and one-half to three miles, to be followed by another period of walking. The trotting period should be increased by three-fourths of a mile at a time. During the hour succeeding a three miles trot, the riders should dismount and walk the horses for five or ten minutes, again mount and the animals should walk for twelve minutes and trot for five minutes successively. Hay, oats, and a preponderance of corn affords the best feed for these horses whilst being trained. They should also be taught to eat hard-tack, as this will prove useful in an emergency. When the forced march is to be made, horse shoes, saddles, and packs should be thoroughly examined. Two sets of reins must be provided, the chief reliance being placed upon the snaffle-rein. Long steps should be cultivated and the march conducted with changing gait, the trotting being at the rate of nine miles per hour on non-macadamized roads, if possible. The trotting should not be kept up for more than three miles after which the riders must dismount and the horses be permitted to walk for five or ten minutes, the riders running or walking according to the temperature of the day. Hills should be climbed in a walk. It is best to leave the hind feet of the horses unshod unless they have been spoiled by previous shoeing. The riders should be keen to detect a loosened shoe and immediately fasten it. There should be one long rest of two hours after thirty-five miles have been passed, and two short ones at given intervals lasting from ten to fifteen minutes each. In warm weather, on the short rests, four or five swallows of water or a few moistened pieces of hard tack should be given the horses; at the long rest they should be watered and fed, chiefly with oats. The animals should not receive water frequently. A well trained cavalry horse should be content with drinking twice a day. The men should eat their rations after having attended to the horses. At half a mile distance from the place where they are to stop for the night, the riders should dismount, loosen straps, and lead the horses. On arriving, saddles and blankets should be removed, a plentiful supply of straw should be spread, and feed and water given. Kulgacheff, (A.), Vestnik obsh. vet., St. Petersb., 1898, x, 14; 57; 91.

General Report of the Medical History of the Chitral Relief Force.--Maunsell.

The water for the force was, with few exceptions, when it was necessarily taken from rivers, obtained from hill-side springs as far removed as possible from habitations and probable sources of contamination. Orders were given from the beginning to boil all drinking water when possible, and tea drinking was encouraged both in camp and on the march. After a time the use of a'um or permanganate of potassium as germicides was advised. It is not always possible to boil water in sufficient amount for drinking purposes on field service. Fuel is often hard to get; in wet weather it will not burn, and in hot weather there are no facilities for cooling the water after being boiled. Soldiers *will* drink the cool-

est water they can find, be it good, bad or indifferent. In the plains, trenches were used for the disposal of excreta. In the hills, the trenches could not be dug too near the men's tents nor was it safe to have them far away. Here a "removal system" was improvised by means of empty tins and boxes. At two points incinerators were successfully used for excreta and rubbish. So far as clothing was concerned, the want of some protection for the temples and nape of the neck was at first felt, but folded Khaki material was subsequently used which went around the brim of the helmet and extended down the back covering the nape. The present field helmet proved unfit for service on this expedition. The emergency ration, known as "armebis," was not a success and was eventually condemed as unsafe. No alcoholics, unless recommended by medical officers, were issued. The cooking was satisfactory, but no utensils containing copper should be used in the field, steel ones being supplied instead. Antiseptic solutions, instead of being prepared on the field from tabloids, were carried in 8 oz. bottles and the breakage was simply enormous. The consensus of opinion among medical officers of the force was that operating tables stood condemned, two tables or boxes covered with blankets answering admirably. The quantity of condensed milk, 52 pounds, furnished each field hospital was insufficient.

Of a total of 43 admissions among British troops for wounds, 4 died and 39 recovered. Among the Native troops there were 34 cases of gunshot wounds, all but one being ultimately discharged to duty.. The wounded all received prompt treatment on the field and were dressed antiseptically from the first. The wounds inflicted were mainly by Martini-Henry and Snider bullets. Maunsell (I) Surgeon Major-General. General report of the medical history of the Chitral Relief Force. Army M. Dep. Rep. 1896, Lond, 1897, xxxviii, 351.

Injuries Caused by the Lee-Metford Bullet.--Sutherland.

From a study of 17 cases observed among the enemy's wounded in the Chitral Expedition and a number seen elsewhere, the author has been impressed by the slight amount of shock produced at the time of the injury, the slight damage done to bones and soft parts, the profuse bleeding in all cases and the rapidity in the healing of wounds. There was but little shock when the bullet passed clean through the parts, save when the shaft of the femur was fractured, when the shock was great. There was more shock when the bullet lodged than when it passed through the tissues. Pain in most cases was slight. The absence of pain and shock were of importance in that in several instances the man hit continued to fight, or was able to escape and resume the offensive in a few days. In nearly every instance where a bone was struck it was simply perforated without subsequent caries and necrosis in the track of the ball, the wound usually healing rapidly. The healing of Lee-Metford wounds under native treatment was rapid and good. This consisted in lavage with hot oil to stop the bleeding and then the application of the raw moist side of the skin of a recently killed fowl or sheep for a few days and then an herb poultice until the wound healed. Both native accounts and personal observation agree that head and abdominal wounds were nearly always fatal, while recovery was the rule in wounds of other parts. Chest wounds all did well where only the lungs were perforated. In some cases natives are still living who suffered 6 or 7 perforations of the extremities and chest. A very desperate man would hardly be stopped by one or two Lee-Metford bullets unless he were struck in a very vital place. Sutherland, (D. W.), Surgeon-Lieutenant. Report on injuries caused by the Lee-Metford observed in Civil Dispensary, Chakdarah, among the enemy's wounded. Appendix to the above.

The "Dum-dum" Bullet.--von Bruns.

In experiments with this bullet fired at cadavers at a distance of about 27 yards, such complete destruction of the soft parts was produced in most instances that the wounds of entrance and of exit could not be distinguished. In cases where the wound of entrance could be identified, it presented the appearance

of a lacerated wound with flaps. The destruction was still greater when the ball struck a bone. The denuded projectile, on striking the flesh, was flattened, causing the casing to separate into numerous rolled fragments, while the lead was shivered into a multitude of pieces which lodged in the tissues. The author maintains that all bullets whose points are uncased should be prohibited in warfare by international consent.—von Bruns. Abstr. . N. York M. J., 1898, lxvii, 767.

The Possibilities of Cocaine.

J. A. Guthrie, Passed Assistant Surgeon, U. S. A., reports the case of a seaman, who, acting as loader for a muzzle-loading howitzer, and while withdrawing the rammer after the charge had been rammed home, suffered a severe injury of both hands from a premature explosion. The right hand was completely severed from the wrist; the left hand was badly lacerated, and both forearms were severely burned, as well as the face, neck and chest. There were several splinter wounds; the largest splinter penetrated the left forearm near the wrist and severed the radial artery. Happily Guthrie was standing near by and controlled the hemorrhage by digital pressure until the man was taken below and tourniquets applied. The accident happened on a small steamer, not belonging to the Navy, and there were no facilities and no proper assistance for the performance of any surgical operation. Neither ether nor chloroform being at hand, morphia was administered hypodermically and the injured surfaces were freely sponged with a 4 per cent solution of cocaine. On the right hand the first row of carpal bones was disarticulated, the torn tissues trimmed, vessels ligated and the skin flaps brought together. On the left hand the metacarpal bones were trimmed off evenly with bone forceps, beginning at the base of the fifth, and running in a line diagonally to the head of the third. The thumb and the first phalanx of the index finger were thus preserved. The skin and periosteum were drawn over the phalanx, and from the palmar surface a fairly good flap was obtained for the metacarpals. The operation was performed under the best antiseptic conditions obtainable. No general anesthetic was used, and although the patient was much excited and very restless during the ordeal, he complained of no pain. The wounds healed promptly and without suppuration. Passed Asst. Surgeon, J. A Guthrie, U. S. N., N. Y. M. J. 1898, lxvii, 315.

News Notes.

Official List of Changes in the Stations and Duties of Officers Serving in the Medical Department, U. S. Army from April 20, 1898, to May 19, 1898.

Acting Assistant Surgeons Llewellyn P. Williamson, Francis Metcalfe and Randolph M. Myers, U. S. Army, will proceed from this city to New York City, and report in person to Maj. George H. Torney, Surgeon, in charge of Hospital Ship, for duty.

Acting Assistant Surgeons Edwin W. Patterson and Edgar A. VanderVeer, U. S. Army, will proceed from this city to Atlanta, Ga., and report in person for duty to Maj. Blair D. Taylor, Surgeon, in charge of the General Hospital, Fort McPherson, Ga.

Acting Assistant Surgeon Edward T. Gibson, U. S. Army, now at Minneapolis, Minn., will proceed without delay to Fort Yates, N. D., and report to the commanding officer of that post for duty.

A contract having been made with Dr. Carroll E. Edson, of Denver, Colo., for duty as Acting Assistant Surgeon at Fort Logan, Colorado, he will proceed to that post and report to the commanding officer for duty.

Col. Charles R. Greenleaf, Assistant Surgeon-General, having reported in person to the Surgeon-General of the Army, the Secretary of War directs that he report in person to the Major-General Commanding the Army, for duty on his staff as Chief Surgeon of the troops in the field.

Captain Edward C. Carter, Assistant Surgeon, having reported in person to the Surgeon-General of the Army, is assigned to duty as assistant to the attending surgeon, Washington, D. C.

Maj. Alfred C. Girard, Surgeon, having reported to the Surgeon-General of the Army, will proceed to West Point, New York, and report in person to the Superintendent of the U. S. Military Academy for temporary duty at that post.

Maj. George H. Torney, Surgeon, is relieved from duty at the U. S. Military Academy, West Point, N. Y., to take effect upon the arrival at that post of Major Girard, and will proceed to New York City and take charge of the hospital ship Vigilancia, under detailed instructions from the Surgeon-General.

Acting Assistant Surgeon H. W. Danforth, U. S. Army, will proceed from Washington, D. C., to Tampa, Florida, and report in person to the Commanding General of the troops at that place for duty.

Maj. Louis Brechemin, Surgeon, is relieved from duty at Fort Sherman, Idaho, and ordered to Vancouver Barracks, Washington,

for duty, relieving Captain Fraderick P. Reynolds, Assistant Surgeon.

Captain Reynolds, on being thus relieved, will repair to Washington, D. C., without delay and report in person to the Surgeon-General of the Army for assignment to duty.

Acting Assistant Surgeons John Guiteras and W. W. Calhoun, U. S. Army, will proceed from Washington, D. C., to Tampa, Florida, and report in person for duty to the Commanding General of the U. S. troops at that place.

Captain Charles Wilcox, Assistant Surgeon, is relieved from duty at Fort Bliss, Texas, and ordered to report in person to the Commanding General of troops in the field at Mobile, Ala.

Maj. William B. Davis, Surgeon, is relieved from duty with the 19th Infantry at Mobile, Ala., and ordered to Fort Myer, Virginia, for temporary duty.

1st Lieut. Wm. E. Richards, Assistant Surgeon, is relieved from duty at Fort Apache, Arizona, to take effect upon the arrival at that post of Capt. Edward Everts, Assistant Surgeon, and will report in person to Major-General John R. Brooke, commanding Camp George H. Thomas, Chickamauga National Park, for duty with troops in the field.

Acting Assistant Surgeon Francis Lieber, U. S. Army, will proceed from this city, Washington, D. C., to Fort Clinch, Fernandina, Florida, and report in person to the Commanding Officer of that post, for duty.

1st Lieutenant James S. Wilson, Assistant Surgeon, will be relieved from duty at Fort Caswell, North Carolina, upon the arrival at that post of Acting Assistant Surgeon Frank Roberts, and will report in person for duty to the Commanding General of the troops in the field at Chickamauga National Park.

Captain Leonard Wood, Assistant Surgeon, is relieved from duty, in this city, Washington, D. C., and will proceed to the following named places, in the order designated, for duty in connection with the recruitment of a regiment of mounted riflemen to be organized under section 7 of the act of Congress approved April 22, 1898. Guthrie, Oklahoma Territory; Santa Fé, New Mexico; Phoenix Arizona Territory; Carson City, Nevada; Salt Lake City, Utah; Cheyenne, Wyoming, Boise City, Idaho.

Major William C. Shannon, Surgeon, having been found by an Army retiring board incapacitated for active service on account of disability incident to the service, his retirement from active service, this date, by the President, is announced, April 23, 1898.

1st Lieutenant Benjamin Brooke, Assistant Surgeon, is retired from active service, as a Captain, upon the finding of an examining board that he is disqualified for the duties of Assistant Surgeon with the rank of Captain, by reason of disability incident to the service, to date from April 20, 1898.

Colonel Charles R. Greenleaf, Assistant Surgeon General will transfer his duties pertaining to the Medical Supply Depot at San Francisco, Cal., to Lieutenant Colonel Johnson V. D. Middleton, Deputy Surgeon-General, Chief Surgeon, Department of California, who will perform them in addition to his present duties, and will also perform the duties of Chief Surgeon, Department of the Columbia during the remainder of the absence on leave of Lieutenant Colonel William D. Wolverton, Deputy Surgeon-General. Major John Van R. Hoff, Surgeon, is relieved from duty at Vancouver Barracks, Washington, and from the temporary charge of the office of the Chief Surgeon Department of the Columbia.

Colonel Greenleaf, and Major Hoff will repair to this city, and report in person to the Surgeon-General of the Army, for duty.

Major Egon A. Koerper, Surgeon, is relieved from duty at Fort Crook, Nebraska, and will report by letter to the Commanding Officer Department of the Missouri, for assignment to duty as Chief Surgeon of that Department.

Captain Rudolph G. Ebert, Assistant Surgeon is relieved from duty at Fort Missoula, Montana, and will proceed to Tampa, Florida, and report to the Commanding Officer, 17th Infantry, for duty.

Lieutenant Colonel Albert Hartsuff, Deputy Surgeon-General, will proceed from Headquarters, Department of the Lakes, Chicago, Illinois, to Chickamauga Park, Ga., for temporary duty.

Captain George E. Bushnell, Assistant Surgeon, is relieved from duty as attending Surgeon, and examiner of recruits at Boston, Mass., and will report in person to the Surgeon-General of the Army, for duty in his office.

The following named medical officers, in addition to their present duties are assigned to duty in charge of the general hospitals at the places opposite their respective names. Lieut. Col. William H. Gardner, Deputy Surgeon-General, Fort Thomas, Ky., Major Blair D. Taylor, Surgeon, Fort McPherson, Georgia.

Acting Assistant Surgeon George H. Penrose, U. S. Army, will proceed from Salt Lake City, Utah, to Fort Douglas, Utah, and report to the Commanding Officer for duty at that post,

Acting Assistant Surgeon, Amos W. Barber, U. S Army, will proceed from Cheyenne, Wyoming to Fort D. A. Russell, Wyoming and report to the Commanding Officer for duty at the post.

A contract having been made with Dr. A. D. McArthur of Littleton, Colorado, for duty as Acting Assistant, Surgeon at Fort Logan, Colorado, he will proceed to that post and report to the Commmanding Officer for duty to relieve Acting assistant Surgeon Carroll E. Edson, whose contract is about to terminate.

Major Robert H. White, Surgeon, is relieved from duty at the Presidio of San Francisco, California, and will report in person to the Commanding General of the expedition to the Philippine Islands for duty as Chief Surgeon.

Major Edward B. Moseley, Surgeon, is relieved from duty at Benicia Barracks, California, and ordered to Presidio of California, relieving Major Robert H. White, Surgeon.

Acting Assistant Surgeon Maynard G. Burgess, U. S. Army, will proceed from this city to Mobile, Alabama, and report in person to the Commanding General of the troops at that place for duty.

Acting Assistant Surgeon H. P. Jackson, U. S. Army, will proceed from Charleston, South Carolina, to Key West, Florida, and report in person to Major William R. Hall, Surgeon, in charge of general hospital at that place for duty.

Acting Assistant Surgeon Charles K. Cutter, U. S. Army, now on duty at Boston, Massachusetts, is assigned to duty as Assistant to the Attending Surgeon, and Examiner of Recruits in that city.

Major Edward T. Comegys, Surgeon, is relieved from duty at Fort Sill, Oklahoma Territory, and will report in person to Major-General John R. Brooke, U. S. Army, Commanding Provisional Corps, Camp George H. Thomas, Chickamauga National Park, Georgia, for assignment to duty as Acting Medical Purveyor, for the supply of troops stationed at that point.

Acting Assistant Surgeon Frederick S. Dewey, U. S. Army, will proceed from Oklahoma City, O. T., to Fort Sill, O. T., and report in person to the Commanding Officer, of that post, for duty.

Acting Assistant Surgeon G. M. De La Torre, U. S. Army is assigned to duty with the 10th Infantry, Tampa, Florida.

Acting Assistant Surgeon W. P. Lawrence, U. S. Army, is assigned to duty with Light Battery B, 4th Artillery, Port Tampa, Fla.

Acting Assistant Surgeon, F. A. Disney, U. S. Army, will proceed from this city to Fort Jefferson, Florida, and report to the Commanding Officer of that post for duty.

Acting Assistant Surgeon Wilfrid Turnbull, U. S. Army, will proceed from this city to Key West, Florida, and report in person for duty to the Commanding Officer, Company E, Battalion of Engineers, at that place.

Captain William C. Borden, Assistant Surgeon, is relieved from duty with the 3rd Infantry, in camp near Mobile, Ala., and will report in person to Major William R. Hall, Surgeon, for duty at the General Hospital, Key West, Florida.

Official List of the Changes of Station and Duties of Commissioned Officers of the U. S. Marine Hospital Service.

Irwin, Fairfax, Surgeon.—To proceed to Reedy Island Quarantine as inspector.—April 26, 1898.

Carter, H. R., Surgeon.—To assume command of Camp Fontainebleau, Miss., in addition to other duties.—April 25, 1898.

Brooks, S. D., Passed Assistant Surgeon.—To proceed to Port Townsend, Wash., and inspect unserviceable property.—April 18, 1898. To represent Service at meeting of Washington State Medical Society at Seattle, Wash., May 10-12, 1898.—April 18, 1898.

Magruder, G. M., Passed Assistant Surgeon.—To proceed to Little Rock, Ark., for special temporary duty.—April 23, 1898.

Geddings, H. D., Passed Assistant Surgeon.—To proceed to Egmont Key, Fla., for special temporary duty, and then to proceed to Tampa, Fla., and await orders.—April 23, 1898.

Wertenbaker, C. P., Passed Assistant Surgeon.—To proceed to Columbia, S. C., for special temporary duty.—April 23, 1898. Upon completion of duty at Columbia, S. C., to proceed to Sumter, S. C., for special temporary duty.—April 28, 1898.

Tabb, S. R., Assistant Surgeon.—Granted extension of leave of absence for 1 day.—April 15, 1898.

Hastings, Hill, Assistant Surgeon.—To report at Bureau for special temporary duty.—April 20, 1898.

Peckham, C. T., Passed Assistant Surgeon.—Granted one day's extension of leave of absence.—May, 4, 1898.

Vaughan, G. T., Passed Assistant Surgeon.—Granted leave of absence for 6 days from May 9, 1898.—May 7, 1898.

Stimpson, W. G., Passed Assistant Surgeon.—Granted leave of absence for 7 days from —May 17, 1898.—May 11, 1898.

Eager, J. M., Passed Assistant Surgeon.—Upon being relieved by Assistant Surgeon A. R. Thomas, to proceed to Galvaston, Texas, and assume command of Service.—May 12, 1898.

Thomas, A. R., Assistant Surgeon.—Upon being relieved by Assistant Surgeon S. B. Grubbs, to proceed to Cape Fear Quarantine, Southport, N. C., and assume command.—May 12, 1898.

Cumming, H. S., Assistant Surgeon.—To report at Immigration Depot, New York, N. Y., for duty.—May 12, 1898.

Grubbs, S. B., Assistant Surgeon.—Relieved from duty at New York, N. Y., and to proceed to Reedy Island Quarantine and report to commanding officer for duty and assignment to quarters.—May 12, 1898.

Russell, H. C., Assistant Surgeon.—To proceed to Chicago, Ill., and report to commanding officer for duty and assignment to quarters. May 6, 1898.

Board Convened.

Board convened to meet at Washington, D. C., May 10, 1898, at 10 o'clock, a. m., for the physical examination of an officer of the Revenue Cutter Service. Surgeon P. H. Bailhache, chairman: Surgeon George Purviance, and Surgeon H. W. Austin, recorder.

Vansant, John, Surgeon.—Granted leave of absence for two months from June 1, 1898.—May 24, 1898.

Gassaway, J. M., Surgeon.—To represent Service at meeting of American Medical Association at Denver, Colo., June 7-10, 1898.—May 18, 1898.

Glennan, A. H., Passed Assistant Surgeon.—Relieved from duty in Hygienic Laboratory, and directed to Tampa, Fla., for duty.—May 13, 1898.

White, J. H., Passed Assistant Surgeon.—To proceed to Delaware Breakwater Quarantine as inspector; then to report at Bureau for special duty.—May 20, 1898.

Kinyoun, J. J., Passed Assistant Surgeon.—To instal exhibit of Service at Trans-Mississippi and International Exposition at Omaha, Neb., May 12, 1898.

To represent Service at meetiug of American Medical Association at Denver Colorado, June 7-10, 1898.—May 18, 1898.

Brown, B. W., Passed Assistant Surgeon—Granted leave of absence for two days from May 29, 1898.—May 26, 1898.

Rosenau, M. J., Passed Assistant Surgeon.—Granted leave of absence for ten days from May 18, 1898.—May 16, 1898.

Decker, C. E., Assistant Surgeon.—Granted leave of absence for one month from May 24, 1898, on account of sickness.—May 23, 1898.

Hastings, Hill, Assistant Surgeon.—To represent Service at Trans-Mississippi and International Exposition at Omaha, Neb.—May 12, 1898.

THE MILITARY SURGEON

A SUPPLEMENT TO THE

NATIONAL MEDICAL REVIEW

UNDER THE CHARGE OF

COLONEL WILLIAM H. FORWOOD,

Assistant Surgeon-General, United States Army.

VOL. I. WASHINGTON, D. C., JULY, 1898. NO. 5.

Original Articles.

THE MODERN TREATMENT OF GUNSHOT WOUNDS IN MILITARY PRACTICE.

BY NICHOLAS SENN,

Lieut. Col. U. S. V.; Consulting Surgeon with the Army in the Field.

Two important causes are destined to bring about a radical change in the treatment of gunshot wounds as practiced in the War of the Rebellion and as will be taught and advised in the Spanish-American and future wars: 1. The modifications which the weapon and projectile have undergone since that time. 2. The introduction into general practice of aseptic and antiseptic surgery. The diminution in the calibre of the bullet, the metallic jacket, the substitution of smokeless for black powder, the greater velocity and power of penetration of the missile are conditions and influences which must necessarily modify the character of the wounds inflicted with the modern weapon. Volumes have been written on this subject by writers in all countries in which the old weapon has been abandoned and the new one introduced. Numerous experiments have been made on cadavers and animals for the purpose of studying the effects of the modern projectile on the tissues with a view to obtaining reliable information as to the changes which will become necessary in the rational treatment of gunshot wounds in modern warfare. Experimental investigation has done much in pointing out some of the changes we may expect to see in the character of gunshot wounds during the present and coming wars, but many of the conclusions drawn from them will have to be modified after we have had an opportunity to study such wounds on a large scale on the battlefield. There can be no question but that the living body and the cadaver represent two entirely different mediums in studying the effects of the modern bullet. From a practical standpoint there remains no doubt as to the following facts which will be confirmed by future experience in the treatment of gunshot injuries inflicted with the small calibre bullet: 1. Few bullets will be found lodged in the body. 2. Wounds will resemble more closely incised than contused wounds. 3. Range will have more influence in changing the character of the wound. 4. Diminished risk of infection. 5.

Dangerous primary hemorrhage will be more, secondary hemorrhage less frequent. 6. More difficult extraction of the bullet. The relative number of dead and wounded and the adaptation of the jacketed bullet to become encysted are subjects on which we can only theorize and conjecture, subjects which can only be definitely settled by an extensive experience. We are better prepared to predict the influence wrought by the recent discoveries and advancements in surgery on the treatment of gunshot wounds and the fate of the wounded. The antiseptic treatment of wounds as taught and practiced by the immortal Lister, and asepsis as developed by the German surgeons, with the distinguished Volkmann as their leader, are destined to minimize the remote dangers of gunshot wounds and other open injuries inflicted on the battlefield. We can safely repeat with the late Professor von Nussbaum, the most enthusiastic follower of Lister: "*The fate of the wounded rests in the hands of the one who applies the first dressing.*" This is the motto every military surgeon must adopt and carry into effect. To this motto I should like to add a cast iron rule that should never be transgressed, and which, if observed without exception, will guard against one of the most fruitful sources of infection, and that rule should be: *Never probe a bullet wound on the batttefield.* The experience of the past has taught us the wisdom of adopting such a universal rule. As our enemy is armed with the Mauser rifle, the cases will be few where there is any indication for probing wounds, and in those few where the bullet has lodged in the body, exploration should be absolutely prohibited until the patient reaches the field hospital, where the facilities for asepsis are at hand and instruments of precision in diagnosis can be employed in locating the missile.

First Aid Dressing.—The idea of sending first aid to the wounded in modern warfare must be abandoned. Alarming hemorrhages from a large vessel of any of the extremities will, in many instances, be arrested by the patient himself or his nearest comrade, by the use of some sort of circular constriction, but the legitimate function of the hospital corps men will begin after the engagement. Desirable as it may appear, attempts at disinfection of the wound or wounds will prove impracticable and useless on the battlefield. Time alone is an important element in contraindicating such a course. Hundreds and thousands may demand attention, to say nothing of the limited facilities for procuring for the wound and its vicinity an aseptic condition. The wisest and safest course to pursue under such circumstances is to make an intelligent use of the first aid dressing package which should be found on the person of every soldier, officers and men. The average first aid package, the one devised by von Esmarch included, is too cumbersome. A first aid package to meet the indications for which it is employed should include: 1. An efficient antiseptic powder. 2. A sufficient quantity of a hygroscopic material to absorb the primary wound secretion and serve as a filter for the wound. 3. A handkerchief or bandage with which to retain the dressing and in case of necessity to be used in constructing a Spanish windlass. 4. Safety pins. A few years ago I devised such a package. It contains about a teaspoonful of a powder composed of four parts of boracic acid and one part of salicylic acid, about one drachm of absorbent cotton, a piece of sterile gauze 40 inches square and a number of safety pins. The powder is lodged in the center of

the cotton compress and is to be applied directly to the wound when the package is used. The package, when compressed, is small and is wrapped in gutta percha. Every soldier of the Illinois volunteers carries such a package and is conversant with the manner in which it should be employed. The piece of gauze can be readily transferred into a Mayer triangular bandage and serves as an excellent substitute for Esmarch's bandage, which is heavier and requires much more space. The figures printed on Esmarch's bandage are useful for instruction, but absolutely without value on the battlefield. In rendering first aid, the injured part should be divested of clothing with as little disturbance of the wound as possible. Instead of removing the clothing it is much better to make free use of scissors and knife in gaining access to the wound. If two wounds are found, both must receive the same attention and care in protecting them against infection. I have used the antiseptic powder referred to on a very large scale and can speak in positive terms of its potent antiseptic properties. It resembles in its effects on the tissues Thiersch's solution, being odorless, non-irritating and non-toxic. It forms with the cotton and primary wound secretion a crust which effectually seals the wound. In the absence of grave symptoms, such as hemorrhage, this dressing should not be disturbed till the patient reaches the field hospital, and in many cases healing of the wound will take place without further interference. The immobilization of the injured part, particularly in cases of compound fracture of the extremities, constitutes an important part of the manifold duties of those who render first aid to the wounded. In all large engagements the supply of mechanical supports carried by the men of the hospital corps will be exhausted before all the wounded have received attention. Splints must be improvised. Rifles, sabres, bayonets, bark, branches of trees, shrubs, etc., the chest in fractures of the upper extremity, the opposite limb in fractures of the thigh or leg will have to be utilized in procuring rest for the injured limb, in transporting patients from the line of battle to the first dressing station. It is here that the surgeons will supplement or improve the work done by the litter bearers and hospital corps. It is for the purpose of doing away with the necessity for using splints that a German military surgeon has recently devised a litter on the plan of a double inclined plane for the lower extremities, a description of which he gave before the Military Section of the International Medical Congress held in Moscow last summer.* In the absence of a litter of such special construction, the same object is attained by securing the same position for the injured limb by a roll made of a blanket, clothing, knapsack, drum, straw, etc. It is my opinion that the transportation of the wounded, suffering from a fracture of the lower extremity, can be done with less pain and with greater security against additional injuries, if the fractured limb is placed in a flexed rather than a straight position. If this statement is found to be correct by future observations, the manner of dressing such cases must undergo a material change. The manner of handling, carrying and conveying patients suffering from fracture of the lower extremity from the field to the hospital is a subject of great importance to those who have in charge the instruction of the hospital corps and company bearers.

Arrest of Hemorrhage on the Field.—Life will be placed in jeopardy and deaths

*See NATIONAL MEDICAL REVIEW, June, 1898 p. 63.—ED.

will occur more frequently from internal than from external hemorrhage; in the treatment of the former little can be done on the field, and the latter class will come more frequently under the care of non-professional men than surgeons. Ligation of arteries in the field will prove impracticable in most instances. The company bearers and hospital corps men should be instructed in the details of the various hemostatic resources applicable in emergency work. Elevation of the injured part, hyperflexion, digital compression and antiseptic tamponade are some of the measures employed which can be entrusted to intelligent and well instructed laymen in arresting hemorrhage. Some form of circular constriction will, however, most frequently be relied upon in arresting hemorrhage complicating gunshot wounds of the extremities. The advantages and dangers attending this method of arresting hemorrhage must be made a prominent feature in giving instructions on first aid. The technique of the procedure, whether it consists in the use of the typical Esmarch elastic constriction, a pair of suspenders, or the Spanish windlass, must be fully explained and demonstrated on the living subject. The fact must be impressed that it is of great importance to render the limb that is to be constricted comparatively bloodless by elevation before the constrictor is applied. The next most important advice to be carried into effect in the use of circular constriction is to *constrict quickly and with sufficient firmness to interrupt at once and completely both the arterial and venous circulation.* A question of immense and far reaching importance, and one which has not yet been definitely answered, is: How long is it safe to continue the constriction? There must be, and there is, a limit as to the length of time it is safe to exclude blood from living tissues. Although cases have been reported in which elastic constriction was continued from three to twelve hours without any serious immediate or remote consequences, the present concensus of opinion of surgeons, I am sure, would be opposed to excluding the blood supply from an entire limb, the seat of a gunshot injury, for a longer period than 3 to 4 hours. The danger of gangrene is always greater in constricting an injured than a healthy limb. A number of years ago I made an extended series of experiments on dogs to determine if possible, the maximum length of time it would be safe to continue elastic constriction. The limb was invariably constricted near its base. The time varied from an hour and a half to 27 hours. In a number of the cases temporary incompetence of the muscles and temporary paralysis followed when the constriction was continued beyond four hours, but the degree of functional disturbance was not always proportionate to the length of time. In only one instance did gangrene occur, and in this case constriction was continued for 17 hours, while the maximum time was 27 hours. This subject is of special interest to the military surgeon, as, from the very nature of things, if circular constriction is resorted to as a hemostatic agent on the battlefield, a considerable length of time must necessarily intervene before the wounded reach the first dressing station or field hospital, where it is removed and hemorrhage arrested by direct and permanent hemostatic measures. I should consider it dangerous to extend the time beyond from 3 to 6 hours and should insist that within this limit of time the patient be placed in charge of a surgeon fully equipped to substitute for it the ligature, aseptic tamponade, or some other direct hemostatic agent.

Locating, Finding and Extracting Bullets.—The new weapon will minimize

the surgeon's work in locating, finding and removing bullets. In the vast majority of cases requiring surgical treatment two wounds will be found, the wound of entrance and of exit marking the location and direction of the tubular wound made by the bullet. The cases in which the jacketed bullet will be found in the body, indicated by the existence of only one wound, will be exceptional. During my visit to the military hospitals in Greece last summer I found a good many wounds made by the small calibre projectile, but only in two cases could I obtain authentic information to the effect that the bullet was found in the tissues of the body and was removed by operative procedure. In the military hospitals in Turkey, I found numerous cases in which the old-fashioned large calibre lead bullet used by the Greeks, had been removed by operation or remained lodged in the body. The search for bullets in modern warfare, if made at all, will be reserved until the patient has reached the field hospital where the surgeons will have at their disposal the necessary instruments for making an accurate diagnosis and the essential facilities for making operations under the strictest aseptic and antiseptic precautions. Before usiug the finger or probe in exploration for a bullet, the wound and the surface for a considerable distance around it should be thoroughly disinfected to guard against all possibility of infecting the wound during the examination or attempts at removal of the bullet should such a course be deemed advisable after examination. One of the most important rules to be followed in locating a bullet in the body is to place the patient and the part injured as nearly as possible in the same position as that occupied the moment the injury was received. The truth of this statement was well exemplified in the case of General Hancock. A number of surgeons of good repute had made repeated attempts to find the bullet by probing, but failed. At last he availed himself of the services of Dr. Reade, the present Surgeon-General of Pennsylvania, who placed the General in the same position he occupied in the saddle and the first attempt to locate the bullet proved successful. The metal clad bullet has to a certain extent rendered the famous Nélaton probe obsolete. However, leaden bullets will be used to a greater or less extent by certain branches of the military force, and the porcelain tip will occasionally prove of service. The great objection to Nélaton's bullet probe is the size of the porcelain tip. *The end of the probe should correspond approximately in size to the calibre of the tubular wound.* By using an instrument constructed on this principle the danger of making false passages is greatly reduced. I have had a bullet probe constructed by Truax, Green & Co., with two porcelain tips, one at each end, riveted to the end of the silver probe, one 22 and the other 38 calibre. In parts of the body composed of deep muscular planes and layers of fascia it is often found absolutely impossible to follow the track of the bullet with any kind of probe. It is in such cases, when it is deemed prudent, from the symptoms presented and the probable location of the bullet, to explore the tract, that the surgeon will take advantage of the use of the knife in dilating the track, using the probe step by step as a guide. The use of the X-ray will prove of the greatest value in all future attempts to locate bullets. In order to locate a bullet with sufficeint accuracy to enable the surgeon to determine the propriety of an operation for its removal and to guide him safely in his work, photographs from at least two directions will have to be

taken. Every field and general hospital should be supplied with an X-ray apparatus, and in all difficult cases this one of the most recent diagnostic inventions should be made use of before undertaking an operation and in preference to repeated recourse to the probe. The famous old-fashioned American bullet forceps have lost their distinction in military surgery through the introduction of the metal-clad bullet. The bullet forceps which I devised a few years ago, is so constructed that it serves at the same time as a useful bullet probe. The grip of the instrument on any metallic bullet, regardless of its calibre, is firm, the bullet once grasped can be extracted without difficulty, as slipping of the instrument is almost an impossibility. It seems to me that when a small calibre bullet is lodged in an important anatomical locality difficult of approach and not giving rise to any serious symptoms, it should be allowed to remain, with the hope it may become encysted without causing any remote serious consequences. Such a conservative course in well selected cases will unquestionably give better results than the too routine practice to extract the bullet at all hazards.

Gunshot Wounds of the Extremities.—Besides the ordinary treatment of gunshot wounds regardless of the anatomical location of the injury, bullet wounds of the extremities, when complicated by fracture or joint injury, present to the surgeon special clinical features of great importance. Injuries of the soft tissues not implicating important vessels and nerves, under modern treatment should heal in a short time under the first dressing with little or no functional impairment. The existence of a gunshot fracture, regardless of the extent of bone injury, no longer furnishes a legitimate indication for a primary amputation. Such injuries under a satisfactory aseptic and mechanical treatment are amenable to repair in the course of time. They are the cases that tax the ingenuity of the surgeon, in applying and maintaining the necessary mechanical support, until the fracture heals by a bony consolidation with the limb in a satisfactory, useful position. In gunshot fractures of the femur, extension and immobilization will now, as it has for a long time, constitute the generally accepted treatment. A determined, strong protest must be made against unnecessary removal of detached fragments of bone. If the wound remains aseptic, the loose fragments of bone will not only retain their vitality, but will take an important part in the restoration of the continuity of the bone and add materially to the functional result. *Debridement* more or less extensive only becomes necessary and should be performed solely in case the wound becomes infected. In such an event the loose, infected fragments of bone should be promptly removed, free tubular drainage established and the wound throughout subjected to thorough disinfection. If the ordinary measures fail, continued irrigation with a saturated solution of the acetate of aluminum will very often bring about the desired results and obviate the necessity of an amputation. Fixation and suspension in such cases will not only procure comfort for the patient, but will answer an excellent purpose in securing and maintaining coaptation, and in facilitating drainage and irrigation. As soon as the fracture has united with sufficient firmness to render extension superfluous, the limb should be immobilized in a circular plaster of Paris splint, extending from base of toes to the groin, and, in high fractures, including the pelvis, after which the patient can be permitted to walk about with the aid of crutches. In gunshot fractures of the leg, early im-

mobilization in a circular plaster of Paris splint is to be advised and yields the most gratifying results. Watchful control of the patient suffering from such injuries and treated by the use of the plaster of Paris bandage, is essential in guarding against disastrous complications and in obtaining satisfactory functional results. Gunshot injuries of the large joints are now within the range of successful conservative treatment. I have seen in the military hospitals both in Greece and Turkey, soon after the close of the war, gunshot wounds of the hip, knee, ankle, shoulder, elbow, and wrist joints not only recover without any operative interference whatever, but in many of the cases, a fair degree of motion and good use of the limb rewarded the conservative treatment. The indications for primary amputation of a limb or part of a limb should at present be restricted to cases in which the nutrition is suspended or seriously threatened by the coexistence of vascular lesions incompatible with the vitality of the tissues at and below the seat of injury. In cases of doubt the soldier is entitled to the benefit of the same, and the conservative treatment should be carried to its ultimate limits, until the appearance of complications demonstrates its futility and dictates the propriety of resorting to a mutilating operation. It is always more creditable to the surgeon to save the limb than to remove it, and the soldier is entitled to the benefits of conservative surgery as much as the civilian, and the glory of the military surgery of the future should and will be to limit more and more the indications for amputation.

Gunshot Wounds of the Skull.—It is my intention to limit my remarks under this heading to penetrating gunshot wounds of the skull. The few cases of this class of injuries that will come under the observation of the military surgeon will invariably require operative interference, provided it holds out any encouragement whatever of saving life. In case a bullet has passed through the skull and its contents, the entire scalp should be thoroughly shaved and disinfected. The wound of entrance must be enlarged so as to expose the perforation freely, which is then enlarged with chisel, DeVilbiss or rongeur forceps sufficiently to enable the surgeon to remove the loose spicula of bone which are frequently found some distance in the brain. With a long eyed probe a strip of iodoform gauze, large enough to loosely pack the tubular visceral wound, should be inserted from the wound of entrance to the wound of exit, and the through gauze drain made to project a few inches beyond the surface of each wound. Through capillary drainage of this kind will prevent accumulation of primary wound secretion in the interior of the skull, and will be of value in arresting capillary hemorrhage. A large hygroscopic dressing enveloping the entire scalp and covering both wounds constitutes the dressing and must be held in place by a few turns of plaster of Paris bandage. The drain must be allowed to remain till the danger of infection is passed, when it is to be removed gradually by shortening it every day or two. In case the bullet should be found lodged in the interior of the skull, the wound of entrance must be treated in the same manner and the bullet located by the careful use of Fluhrer's aluminum probe. A counter opening may become necessary in removing the bullet, if it has reached the opposite side of the skull, or when it has become deflected or arrested in its course near the surface of the brain, in case the locality in which it has become lodged warrants operative interference. In all visceral injuries of the contents of the skull resulting from gunshot wounds,

capillary or tubular drainage or a combination of the two is indicated and should be continued till there is no further danger of infection, hemorrhage or accumulation of wound products, when the drain is to be gradually removed. The value of the X-ray in locating bullets in the interior of the cranium has as yet not been definitely ascertained.

Gunshot Wounds of the Chest.—Penetrating gunshot wounds of the chest are attended by an enormous mortality owing to the physiological importance of the organs which it contains. Visceral wounds of the heart and large blood vessels usually result in death in a few moments from acute anæmia. Hemorrhage into the pleural cavity and into the large bronchial tubes interferes mechanically with the respiratory functions and frequently proves fatal in a short time and if the patient recovers from its immediate effects, life is placed in danger by the complications, which too often occur, caused by the hemothorax. The accumulation of even a large quantity of blood in the pleural cavity is not incompatable with a speedy recovery, as when the blood is aseptic its removal by absorption is accomplished in a short time. Experience during the War of the Rebellion showed that in gunshot wounds of the chest the chances of life were much better if the bullet passed through the chest than if it remained lodged in the body. I saw a number of soldiers in the Græco-Turkish war, that had been shot through the chest, convalescent and in fair health a few weeks after the injury was inflicted. We have made little progress in the treatment of penetrating wounds of the chest. Direct operative treatment of visceral wounds of heart and lungs is always attended by imminent risk to life from pulmonary collapse. This source of danger stands in the way of direct treatment of visceral wounds of the chest. Hemorrhage from wounds of the lung is often arrested spontaneously by the accumulation of blood in the cavity of the chest, causing temporary pulmonary collapse and tamponade of the tubular visceral wound by the formation of a blood-clot. Free incision of the chest wall has been strongly advocated by several French surgeons in cases of pentrating wound of the chest with a view of arresting hemorrhage by ligature, tamponade or the use of the cautery, but the profession on the whole, for good reasons is opposed to such heroic treatment. Unless the source of hemorrhage is one of the intercostal or the internal mammary artery it is advisable to rely on nature's resources in arresting the bleeding.

Hemorrhage from the intercostal arteries can be effectually checked by tamponade, using for this purpose an hour glass shaped tampon of iodoform gauze. Rest in the recumbent position, with the chest slightly elevated, is essential in aiding spontaneous arrest of hemorrhage and in the prevention of complications. A rise in the temperature in the first forty-eight hours is no indication of sepsis, as, with few exceptions, it indicates a febrile disturbance caused by the absorption of fibrin ferment, the so-called fermentation fever. Should later symptoms set in suggestive of septic infection, aspiration should be promptly resorted to, and if not followed by speedy improvement, no time should be lost in subjecting the patient to the same medical treatment as advised and practised for empyema, that is, rib-resection, free incision and drainage. The production of an artificial pneumothorax or hydrothorax by the introduction into the pleural cavity on the injured side of a nontoxic gas or filtered atmospheric air or sterilized water or nontoxic antiseptic solutions has not proved satisfactory in the treatment of intra-tho-

racic traumatic hemorrhage. From what has been said it is clear that the best treatment in penetrating gunshot wounds of the chest consists in hermetically sealing the wound of entrance and exit, if such exists, under strict aseptic precautions, and in watching for and treating subsequent complications as they present themselves.

To be continued.

THE SELECTION AND EARLY CARE OF RECRUITS FOR THE MILITARY SERVICE.

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The technical methods of examining recruits and the standard of requirements are set forth in official orders and instructions issued by the government on this subject. These should be carefully studied by examining surgeons as a guide to their work, but to be able to select all the really suitable men out of any given number presented and do this promptly and without serious errors is a matter that requires some experience, professional skill and much close observation. A medical officer is not fully prepared for such duty until he has been on a campaign in the field and acquired a practical knowledge of the conditions under which military service in its various phases has to be performed. Hence it is that surgeons and mustering officers of the standing army are detailed to select men for the volunteer forces in time of war. Service in the national guard is very light and many men are accepted there under or over the limit of age and weight and with disabilities that would incapacitate them for the duties and hardships of an active campaign.

When a man is passed and sworn in without note of any defect on the muster roll it is accepted as a clean bill of health from that date and diseases or disabilities that may thereafter appear are supposed to be incident to military service and constitute a valid claim for pension. A man for example with progressive loss of hearing who has only partial deafness which escapes notice at the time of examination, must be regarded as having received his injury from the firing of a gun or some other cause "in the line of duty." Even with a reasonable amount of skill and vigilance on the part of the examining surgeon cases of tuberculosis in the early stages, recurrent attacks of rheumatism, urinary troubles, and the like will sometimes escape detection and entail unjust burdens for pension on the government. Honorably discharged soldiers whether for disability or not take precedence over others in obtaining government employ.

In the early stages of a war while the enthusiasm for military glory prevails, men are disposed to make light of their weak points or deny them altogether in the laudable desire to go with the soldiers to the front. Then men who never had a day's sickness in their lives are numerous and no little puny spindle legged youth of five feet four considers himself too light to carry a knapsack. But later on as people become weary of the continued hostilities and begin to sing "when this cruel war is over" and the lasso of compulsory draft has to be used in bringing out more volunteers to fill up the depleted ranks, recruiting officers hear a very different story. The multitude of ills that flesh is heir to among those called upon to bear arms is now most astonishing. Myopia, deafness, cough, diarrhea, rheumatism and many other ailments seem to have become almost epidemic and the extraordinary number of those within the age limit, who are disposed to claim exemption on

the ground of one physical disability or another is quite discouraging. The examining surgeon must be prepared to contemplate these different phases of the situation from whichever side presented and it will require the exercise of all his medical skill and acuteness of observation to guard against over persuasion and concealment in the one case and exaggeration and malingering in the other.

In European countries where the system of conscription is enforced, it devolves upon the recruit to show on what ground he may claim exemption from military service and where there is doubt as to his fitness he may be placed in hospital for observation or even treatment, but he is not compelled to undergo any severe surgical operation as for hernia, &c., without his consent. In England as in this country enlistments are voluntary and under ordinary circumstances the examining surgeon has only to protect the government against the admission of men who are mentally and physically disqualified or who from slight defects are liable to speedily break down in the performance of military duty.

Every man should have sufficient physical strength and endurance to carry his load of 50 or 60 lbs., over the first 10 or 12 miles without noticeable fatigue. A well seasoned capable soldier in good condition will begin to feel the effects of exhaustion only toward the end of a day's hard march. Forced and night marches are often necessary especially just before a battle and the inconvenience of heat, cold, rain and mud must be expected as a matter of course in the exigencies of military operations. When a large column of infantry, cavalry, artillery and wagon trains is on the march over dry country roads the dense cloud of dust in which men and animals become enveloped is very oppressive. With the sun's rays beaming down on their heads, the heated earth beneath their feet, the air motionless, tired and thirsty, it seems at times as if the point of suffocation were near at hand. Still they must struggle wearily on until the anxiously looked for halt and rest is reached. When rain prevails the same roads are cut up by thousands of vehicles and the marching troops wade along in ruts and deep mud—the weight of their load increased by saturation of the down pouring water, in which at the end of a march they may have to pitch the tents and lie down to sleep in wet clothes.

Service on a campaign involves other duties beside mere drill and dress-parade. Men must know how to use a pick and shovel. The first thing in establishing a camp is to clear off the ground and dig gutters around the tents and sinks for the men or it may be necessary to labor night and day in throwing up earthworks and entrenchments against the enemy. Soldiers have to handle heavy baggage in loading and unloading wagons and cars and boats. They must cut wood and carry water and do general police work after coming off guard. Service in the militia at home is a mere Sunday school picnic to all this and it affords no test of qualification for the selection of men to take the field in time of war.

The one subject and aim of the recruiting officers is to secure men for the ranks, not subjects for the hospital or the guard-house. In conducting the examination of a number of men they should be brought into a large, well-lighted room provided with a dressing place or screen, a table, platform scales and measuring-rod, test-type card hung in a favorable light with distances marked off on the floor, set of test wools for color sense, a stethoscope, ear speculum, tongue depressor and steel tape measure. A non-commissioned officer stationed at the dressing room door sends the men out one

at a time as they are wanted, directing them to hop first on one foot and then the other to the scales where their weight and height are recorded and a preliminary auscultation of the heart is made while under the excitement of a little exercise.

Vision and color sense are then tested and the eyes, ears and throat quickly inspected. With his heels together and his knees fixed the man now bends forward, bringing the tips of his fingers to the floor and remains in that position until he is inspected for piles, curvature of the spine, &c., and then stands erect while the surgeon takes a general view for the detection of deformities, muscular atrophy, skin affections, scars, marks of recent plasters or cupping, old fractures, sprains, varicose veins, varicocele, hernia, retained testicle, hypospadias, venereal ulcers, bad feet, &c. The applicant should take a bath before examination and for this purpose it is convenient to have a suitable tub in connection with the dressing room. Unclean looking individuals should place their clothing a little apart from that of others lest it be infected with pediculi. The presence of these parasites is at once revealed by the red lines of scratching which mark the skin over the back and limbs. Inspection of the clothing will sometimes furnish evidence of incontinence of urine, bleeding piles, gonorrhea, &c.

The man is now required to stand on one foot and exercise in succession the toes, ankle, knee, and hip joint of the opposite side. Then he extends both arms to the front spreading out and closing all the fingers and exercises smartly the wrists, elbows, and shoulders. Next the heart and lungs are to be carefully examined in the quiet state and the chest measures are taken at expiration and full inspiration. If there be any latent cough, deep inspiration and strong percussion will usually elicit it. Hernia in the inguinal canal will often pass any mere superficial inspection but it can be detected by placing the tip of one finger gently in the external ring, requiring the man to bend a little forward and cough hard.

The defects most frequently found are myopia, contracted chest, heart affections varicocele, varicose veins of the legs and rectum, incomplete development of the sexual organs—(retained or atrophied testicles, hypospadias,) bad feet, poor physique, and alcoholism. Visual defects requiring the use of glasses is a cause of rejection in enlisted men, but exception may be made in the case of officers. Chronic conjunctivitis is not admissible because of exposure to dust, smoke, and sunlight. Contracted chest often results from mere habit, by sitting and sleeping in faulty positions and by neglect of all attention to proper physical culture. Such cases offer favorable conditions for tubercular infection but in young subjects, otherwise sound, these deformities are easily corrected and cured by military training and the "setting-up drill." When, however, they result from previous attacks of pleurisy or pneumonia, or when there is actual disease of the lung, the man must be rejected. Good lungs are among the essential qualities of a soldier.

Mere functional disturbances of the heart likewise may result from imperfect expansion of the lungs and defective æration of the blood or from the too free use of tobacco and stimulants and they will disappear with removal of the cause. Organic disorders of the heart in the form of dilatation or defective valves often result from over exertion and it is remarkable how many such cases are to be found among young athletes of fine physique where there is no history of rheumatism or other apparent cause.

Heart disease is a common cause of discharge for disability and it demands a high rate of pension which may continue for many years. The condition of the heart therefor should receive especial attention and study before passing a recruit.

Varicocele more or less marked is very common even among young men and may be accepted when not very large, but it should be noted on the muster roll and the soldier warned that in case of disability from that cause he must submit to operation which is now so safe and certain in its results that this may reasonably be demanded in lieu of pension. Hernia and varicose veins are also curable in many cases and may be accepted after successful operation. Among the recruits recently examined by me for the 1st District of Columbia volunteers, five men rejected for hernia and one for extensive varicose veins of the leg, submitted to operation and after a few weeks, were all enlisted and sent to the regiment.

Flat foot is less marked among Americans than Europeans. When not accompanied by eversion and the foot is otherwise good it rarely causes any disability; but tender feet from chilblains, ingrowing nail, overlapping toes, bunions or corns (especially on the sole) may become a very serious impediment to the infantry soldier and should be closely scrutinized before acceptance. "Poor physique" is to be considered with reference to its cause. The condition presented under this caption may afford valuable evidence of some internal disorder—malaria, indigestion, chronic diarrhea, diabetes, tuberculosis, &c., or it may be merely the result of poverty and lack of proper food and comforts in a man otherwise sound and capable. It is forbidden to enlist a man under the influence of liquor. The evidence of chronic alcoholism is readily detected by the experienced observer. Habitual indulgence in strong drink soon stamps upon the countenance and general manner of a man a well marked characteristic expression that is easily recognized and not effaced even after long periods of abstinence. Drinkers are not necessarily lacking in intelligence or bravery, but when the alcoholic habit is well marked they ought to be rejected because they set a bad example to other men and often become an intolerable nuisance themselves.

Among the disabilities most difficult either to affirm or deny is chronic muscular rheumatism. Evidence of this affection is limited mainly to the patient's own admissions and when a recruit is anxious to enlist these are hard to elicit. On the other hand when men are to be drafted into service against their inclinations chronic rheumatism may be offered as a ground of exemption. The difficulties of the surgeon are increased by the fact that this is a pensionable disease for which a soldier may claim excuse from duty or discharge at any time. Moreover while muscular rheumatism is sometimes a real cause of disability its severity varies widely in degree from a few casual pains to a more or less constant torture without any corresponding objective symptoms. Syphilis when recognizable is a cause of rejection but uncomplicated gonorrhea is usually passed. Rheumatoid pains resulting from these two diseases may often be mistaken by the soldier for rheumatism.

The age limit for first enlistment should be placed between 21 and 40 years. Forty-five years is too old to begin service except for short periods and eighteen is too young. Men should be more mature in physical development before undertaking active campaign work. Moreover when there is a strong desire to enlist some will always manage to get in a

year or two under and three or four years over the limit. In selecting recruits for temporary duty during an emergency a more liberal standard of qualification may be adopted than that prescribed for the regular army. Hence slight defects such as retained testicle, a moderate amount of varicose veins in the legs, and a number of others, might safely be accepted for a year or two of service, that would cause the rejection of men expected to remain and re-enlist as long as possible in the permanent forces.

Recruits mustered into service pass at once from the civil to a military status and begin a new life under new conditions. They are now governed by the rules and articles of war and subject to military discipline. The unaccustomed restraint and strict obedience to orders is at first irksome and difficult to learn and when in addition to this they have to take the field and live in camp there are for them many trials and hardships to endure which scarcely affect the older soldiers. Habits and modes of life acquired at home must give place to others that seem to them almost intolerable.

The first lesson a new recruit has to learn is how to take care of himself and become fairly comfortable in his new environments. How to keep himself and his clothing clean in camp, in wind and dust, rain and mud; how to sleep on the ground in a tent; how to keep awake at night on post and make up for loss of sleep in the day time, amid the din and confusion of men, animals and vehicles on all sides; how to tolerate the unaccustomed food and modes of cooking and serving meals, and the water without ice. Recruits in the early stage of their training seldom realize the importance of keeping their feet and their stomachs in good order. These are the two points from which troubles among them most frequently arise. They require to be closely watched and often warned against irregular and imprudent indulgence of the stomach and neglect to take proper care of their socks and shoes and to bathe the feet.

While these and other similar difficulties are being overcome and the men are acquiring proficiency in the daily drills and maneuvers, the surgeon is busy attending to numerous cases that might be classed as children's diseases to which "raw, unseasoned recruits" seem to be remarkably susceptible, such as catarrhal affections, often with high temperature, stomach and bowel disorders, mumps, measles and perhaps a few cases of pneumonia and typhoid fever which are usually very severe. Nostalgia is a frequent complication which influences the prognosis in other diseases. Much unnecessary suffering has resulted from careless and unclean vaccine operations that have too often caused deep ulceration and extensive phlegmonous cellulitis and kept recruits in hospital for weeks. Some mistakes of the examining officers will now be discovered. Parents apply for the discharge of minors who have enlisted without their consent, weaklings break down and go into hospital and disabilities that were overlooked at enlistment begin to make their appearance.

Thus there is a general shaking up and weeding out while the process of early seasoning goes on and from three to six months will elapse before recruits can be brought up to the standard of fairly reliable soldiers. In order to conduct them through this critical period of their training in the shortest possible time with the smallest percentage of loss from discharge, a considerable amount of care and tact and patience is necessary. Considering other trials which these men have to pass through in the first few weeks of their seasoning, the more severe tests of strength and rigid exactions

of discipline may with economy be tempered a little to the shorn lamb in order not to discourage or break him down by demanding too much at once. It is especially important to have the first encampment in a very healthy locality, with good water and plenty of space where the strictest sanitary rules are enforced—far enough from home to avoid the disturbing influence of many visiting relatives and friends and without extreme change in climatic conditions which are to be reached when necessary by progressive stages. Peddlers should be rigidly excluded and sutlers strictly controlled and the regulation army diet supplemented for a time by a few extras.

The endurance of severe and prolonged exertion especially in the hot sun can only be acquired gradually, but constant occupation and employment of a lighter character is a great benefit both to mind and body. Home sickness is much relieved by facilitating free communication with friends through prompt and regular mail service. Cheerfulness and contentment among the men may be prompted by a little aid and encouragement from officers who take an interest in their personal comfort. New recruits require to be loooked after and advised like children. Kind treatment, tactful management and careful attention to their welfare will be rewarded by attachment and obedience to their officers of the greatest advantage later on when endurance and courage are to be tried. Rude treatment and dyspeptic manners are not well borne by recruits just from civil life who resent this with ill feeling, sulkiness and discontent, under which many take refuge on the sick report for slight ailments that would otherwise be borne in patience. Great care should be exercised in the selection of officers that men may look up to them with pride and confidence. One of Napoleon's sayings was that an army of deer led by a lion is better than an army of lions led by a deer.

Reviews.

AN EPITOME OF TRIPLER'S MANUAL AND OTHER PUBLICATIONS ON THE EXAMINATION OF RECRUITS. By Charles R. Greenleaf, Colonel and Assistant Surgeon-General, U. S. A. Fourth Edition, May, 1898. Washington, D. C. Judd and Detweiler.

This timely work by such an acknowldged authority on the subject as Dr. Greenleaf is a matter of great moment. From the present edition there has been eliminated most of the material that is embodied in circulars from the recruiting branch of the Adjutant General's Office, and in the Manual for the Medical Department. This Epitome furnishes to line officers who may be assigned to the recruiting service instructions regarding physical examination of the candidates for enlistment which will be of inestimable value to them in the absence of a medical officer upon whose professional judgment they would otherwise rely.

The enlistment of recruits is generally made upon the concurrent action of the line and medical officer, the former being responsible for the general fitness, aptitude, and character of the applicant; the latter for his physical and mental condition. The exigencies of the service, however, especially in times like these, make it occasionally impracticable for a medical officer to be present at all enlistments. For the line officer, therefore, and for that matter we may include the recent additions to the medical service of the volunteers, Dr. Greenleaf has furnished a work which will prove of the greatest value, one, indeed, which he can hardly do without. It gives minute directions for the examination of recruits, contains a table of disqualifications for service in the army, and has an index both thorough and complete.

Selections.

Incapacity of Recruits for Military Service Manifested after their Enlistment.--Voitsekhovski.

A large proportion (16 per cent. and over) of new recruits are annually discharged from the Russian army because they do not come up to the requirements of military service. This is not because of a deterioration of health due to bad food, poor lodging or improper clothing, for many recruits, especially from among the peasantry, improve in health and physique after joining the colors. But modern military training is severe, necessitating maneuvres in the winter, sleeping in the field, etc., a fact but ill appreciated by the civil members of recruiting commissions. It follows that men are accepted who would easily have withstood the fatigue and privations of former methods of training but cannot go through with that at present in force and consequently must be discharged upon re-examination. Army surgeons are aware of the necesity of selecting strong men for the service, or such as promise to become robust through military exercises. They realize that no amount of training will strengthen a recruit with ill developed or feebly nourished bones and muscles. But under such conditions and when evidences of disease exist, and are indeterminate the commissions as at present constituted permit the candidate to decide whether he will enter the service at once or postpone it until the following year. The latter naturally decides to begin at once in order to have it over as soon as possible, and, as a result, must be discharged at a later date. Recruiting commissions should be particularly careful in investigating acuity of vision, imperfections in which frequently become manifest only after the recruit is taught the handling of the gun. As it is, the presence of a hernia will exclude a recruit from duty while a palpable enlargement of the ring will be passed over. But in addition to this, many recruits must be discharged for conditions which existed at the time of their entry into service, conditions which are easy of recognition, viz.: Curvature of the spine, disease of the bones, hydrocele, etc., and also for diseases of the ear which are passed over in the hurried examination now made. In 1896 three recruits died of consumption shortly after their arrival in quarters and three were found to be suffering from mental disease. All this is due to the fact that the recruiting commissions are made up of men in civil life, one physician who has no vote, and a military officer, if there be one in the neighborhood. All should be military men, plenty of time should be devoted to the examination (50 recruits per day should be the maximum and not from 120 to 160 as now), and in doubtful cases recruits should be sent to hospital for further observation. Voitsekhovski (N. F.) Voyenno-med. J., St. Petersb., 1897, clxxxx, med. spec. pt. 369.

The Outlook for the Efficiency of the Sanitary Service of the German Army in a Future War.--Eilert.

(Continued from May number.)

No commanding officer sends all of his troops into action simultaneously; he always holds back a certain part in reserve to throw into the scale at the critical moment. Is it not wise to follow such a course with the sanitary service, since we can reckon with certainty that the difference in the number of wounded at the various points on the battle-field will in the future be far greater, and the necessity for sanitary assistance at the worst points far more imperative than ever before. For, if it be remembered that formerly the average number of wounded in a majority of the corps taking part in battle did not reach the average for all the troops engaged, but, on the contrary, was frequently below such average, and that the average was only approached or attained in a few corps, and was exceeded at but a limited number of points on the field, and further when it is recalled that in future conflicts, the change to be anticipated is that the average number of wounded will be exceeded at more points and that this excess will be greater than formerly, it follows that a serious blunder will be committed if each individual

corps on entering battle is accompanied by a sanitary detachment adapted in personnel and equipment solely for treating the anticipated average number of wounded. The inevitable result would be that at critical points in the action the medical service would be deficient, and that at other and unimportant points on the field it would be more numerous than necessary. To avoid such a contingency, each corps should carry with it into battle only a part of its sanitary department, and from the portions left behind from various corps, an efficient reserve could be formed, which can be held in readiness to be dispatched in a moment, to the critical points in the engagement. How large this reserve should be is difficult to determine ; it should be decided according to the exigencies of each individual case. So much of the sanitary service should accompany the troops into action, as is competent to meet all the demands likely to arise before the reserve can come up. It is difficult to give exact figures, but an army of 10 corps, for example, might be provided with a reserve of 15 sanitary detachments and 60 field hospitals, which, divided into 2 or 3 parts, could be held in rear, preferably at the junction of several roads, ready to proceed at once to the indicated point. Suppose that an enemy lies with his left wing protected by impassable ground. The attacking force consists of 10 corps, 2 of which are in reserve. Each corps carries with it its full sanitary force and equipment. We can reckon with reasonable certainty that the attack will be directed upon the right wing of the enemy, that at this spot there will be the most serious fighting and a considerable excess over the average number of wounded for all the troops engaged, while on the other wing the number of wounded will fall far below the average. Let us assume that the corps furthest to the left of the attacking force will lose 40 per cent. of its effective strength and the reserve corps, drawn into the fight, 20 to 23 per cent., the number of the injured in the different corps will constantly decrease as one leaves this point and on the extreme right wing, 5 to 8 per cent. will hardly be reached. The sanitary service on the left wing will be inadequate and that on the right wing will be unnecessarily large for the demands made upon it. But it will be impossible to conduct what can be spared from the right wing, 4 to 5 German miles across the battle field to the left, in time to be of any service. How much better would it be if each corps had entered battle with only half of its regular sanitary detachment, while the large reserve thus remaining were stationed on the left wing where the severest fighting was surely to be looked for.

Reference has already been made to the altered conditions of modern warfare growing out of the general use of the small calibre rifle and the mantled bullet, and it has been shown that the area likely to be covered in a future engagement will be far larger and the duration of the battle far longer than heretofore. It will, therefore, become more necessary than ever to conserve as far as possible the strength and endurance of the personnel, etc., of the sanitary service. Men and horses should have an adequate measure of rest before the action, and the former should eat and the latter be fed and watered. The delay in the establishment of the principal dressing station until the lines upon which the action is likely to be developed become apparent, will do much to further this end, and the formation of a reserve sanitary detachment, as above described, will insure a fresh supply of men and material at any point where either shows signs of weakness or exhaustion.

If a future battle be brought to a conclusion in one day, the decisive moment will certainly not be reached until evening, and, in consequence, the search for and recovery of the wounded cannot be begun before nightfall, nor completed (at least at critical points where the injured will number from 20 to 40 per cent. of the effective strength) until well into the next day at the very earliest. An appreciation of this fact has led to many experiments in lighting the field by electricity and other means but so far without success. Eilert. Ibid , page 70.

To be continued.

News Notes.

Official List of the Changes of Station and Duties of Commissioned Officers of the U. S. Marine Hospital Service for the 14 Days Ended June 9, 1898.

Stewart, W. J. S., Passed-Assistant Surgeon.—Upon being relieved by Assistant Surgeon John McMullen, to report at Washington, D. C., for duty.—June 6, 1898.

Norman, Seaton, Assistant Surgeon.—Granted leave of absence for two days.—May 27, 1898.

McMullen, John, Assistant Surgeon To proceed to Vineyard Haven, Mass., and assume command of Service.—June 6, 1898.

Boards Convened;

Board convened to meet at U. S. Marine Hospital, Chelsea, Mass., at 4 o'clock, p. m., June 1, 1898, for physical examination of officer of the Revenue Cutter Service. Detail for the Board: Assistant Surgeon H. W. Wickes, Chairman; Assistant Surgeon L. L. Lumsden, Recorder.

Board convened to meet at Washington, D. C., at 10 o'clock, a. m., July 6, 1898, for examination of officers for promotion and candidates for appointment as Assistant Surgeon. Detail for the Board: Surgeon George Purviance, Chairman, Surgeon John Godfrey; Surgeon D. A. Carmichael, Recorder.

Official List of Changes in the Stations and Duties of Officers Serving in the Medical Department, U. S. Army, from May 20th, 1898, to June 18th, 1898.

Captain Jefferson R. Kean, Assistant Surgeon, U. S. Army, ordered to Jacksonville, Fla., to report to Major-General Fitzhugh Lee, U. S. Vol., Commanding 7th Army Corps, for duty.

Captain Peter R. Egan, Assistant Surgeon, U. S. Army, ordered to Tampa, Fla., to report to Major-General John J. Coppinger, U. S. Volunteers, Commanding 4th Army Corps.

Captain Henry R. Stiles, Assistant Surgeon, U. S. Army, having reported in person to the Surgeon-General of the Army, will report in person to Major Charles Richard, Surgeon in charge of hospital train, for duty.

Major Zurius L. Powell, Surgeon, will proceed from Fort Riley, Kansas, to Mobile, Ala., and report in person to Brigadier-General William C. Oates, U. S. Vol., 4th Army Corps., for duty as Chief Surgeon on his staff.

Acting Assistant Surgeon, Wylie G. Woodruff, U. S. Army, will proceed from Lawrence to Fort Riley, Kansas, and report in person to the Commanding Officer of that post for duty.

Acting Assistant Surgeon John R. Devereux, U. S. Army, will proceed from this city to Chickamauga, Ga., and report to Major E. C. Carter, Brigade Surgeon, U. S. Vols, in charge of Leiter General Hospital for duty.

Captain John S. Kulp, Assistant Surgeon, U. S. Army, ordered to Camp George H. Thomas, Chickamauga National Park, Georgia, and will report to Major-General James F. Wade, U. S. Volunteers, Commanding 3rd Army Corps, for duty.

Major Charles Richard, Surgeon U. S. Army, having reported in person to the Surgeon-General of the Army, is assigned to duty in charge of the hospital train.

A board of officers to consist of Colonel Charles C. Byrne, Assistant Surgeon-General; Major James P Kimball, Surgeon, and Major John D. Hall, Surgeon, is appointed to meet at Governors Island, New York City, for the examination of such officers of the Medical Department as may be ordered before it to determine their fitness for promotion.

Captain William C. Gorgas, Assistant Surgeon, ordered to report to the president of the examining board, New York City, for examination for promotion.

Captain Henry S. T. Harris, Assistant Surgeon, now on duty with Cavalry Division, Tampa, Florida, will report for duty to Major-General Fitzhugh Lee, U. S. Volunteers, Commanding 7th Army Corps, Jacksonville, Florida.

Captain Henry B. Shaw, Assistant Surgeon, now on duty at the General Hospital, Key West, Fla., is ordered to duty at Key West Barracks, Fla.

Captain Paul Clendenin, Assistant Surgeon, now at Key West Barracks ordered to Jacksonville, Fla., for duty with 7th Army Corps.

Captain Adrian S. Polhemus, Assistant Surgeon, will proceed from Fort Wingate, New Mexico, to Chickamauga National Park, Ga., and report for duty with 3rd Army Corps.

Captain Charles B. Ewing, Assistant Surgeon, now on duty with Cavalry Division, Tampa, Fla., will report to Major-General James F. Wade, U. S. Volunteers, Commanding 3rd Army Corps, Chicamauga National Park, for duty at Camp George H. Thomas, Georgia.

Acting Assistant Surgeon George B. Lee, U. S. Army, will proceed to Jacksonville, Florida, and report to Major-General Fitzhugh Lee, U. S. Vols., Commanding 7th Army Corps, for duty.

Acting Assistant Surgeon Medwin Leale, U. S. Army, is assigned to duty with Squadron of New York Cavalry Vols., at Camp Alger, Virginia.

Captain John L. Phillips, Assistant Surgeon, having reported to the Surgeon-General of the Army, is ordered to Camp Alger, Falls Church, Va., for duty with 2d Army Corps.

The order assigning Captain Ogden Rafferty, Assistant Surgeon, to duty in General Hospital, Key West, Florida, is revoked, and he will proceed to Falls Church, Virginia, and report to Major-General William M. Graham, U. S. Vols., for duty.

First Lieutenant Carl R. Darnall, Assistant Surgeon, will proceed to Tampa, Fla., and report to Major-General William R. Shafter, U. S. Vols., Commanding 5th Army Corps, for duty.

Acting Assistant Surgeon, S. M. Gonzalez, U. S. Army, will proceed to Tampa, Fla., and report for duty with Cavalry Division.

Acting Assistant Surgeon Thomas R. Marshall, U. S. Army, will proceed from Richmond, Va., to Tampa, Florida, and report for duty with troops in the field.

Acting Assistant Surgeon George H. Penrose, U. S. Army, will proceed from Fort Douglas, Utah, to San Francisco, Cal., and report for duty with the Utah Batteries for the expedition to the Philippine Islands.

Acting Assistant Surgeon A. S. Condon, U. S. Army, will proceed from Ogden, Utah, to Fort Bayard, N. M., and report for duty.

Acting Assistant Surgeon, James H. McCall, U. S. Army will proceed from Huntingdon, Tennessee, to Fort McPherson, Ga., and report for duty in the General Hospital at that place.

Acting Assistant Surgeon, W. P. Chamberlain, U. S. Army, will proceed from this city to Fort Monroe, Va., and report for duty.

Captains Frank R. K. Keefer and Paul F. Straub, Assistant Surgeons, will report to the Commanding General, Department of the Pacific, for duty with the expedition to the Philipine Islands.

Captain Charles F. Kieffer and 1st Lieut. Powell C. Fauntleroy, Assistant Surgeons, ordered to Tampa, Fla., for duty.

Captain Ogden Rafferty, Assistant Surgeon, ordered to Key West, Fla., for duty in the General Hospital at that place.

Captain William C. Gorgas, Assistant Surgeon, ordered to duty on U. S. Hospital Ship Relief.

Captain John S. Kulp, Assistant Surgeon, is relieved from duty in Department of the Columbia, and ordered to report in person to the Surgeon General of the Army, for further orders.

Captain Henry R. Stiles, Assistant Surgeon, ordered to Tampa, Fla., for duty with 5th Army Corps.

Captain William Stephenson, Assistant Surgeon, is relieved from duty with 4th U. S. Infantry, and ordered to Camp George H. Thomas, Chickamauga National Park, Ga., for duty with 1st A. C.

Captain Henry I. Raymond, Assistant Surgeon, is relieved from duty with 13th U. S. Infantry and ordered to Camp George H. Thomas, Chickamauga National Park, Georgia.

Captains Frederick P. Reynolds and George J. Newgarden, Assistant Surgeons, having reported in person to the Surgeon General of the Army, are ordered to Tampa, Florida, for duty with Cavalry Division.

Captain James D. Glennan, Assistant Surgeon, is relieved from duty with 6th U. S. Cavalry, and ordered to Camp George H. Thomas, Chicamauga Park, Ga.

Captain William P. Kendall, Assistant Surgeon, is relieved from duty with the 9th U. S. Cavalry, and will proceed to Camp George H. Thomas, Chickamauga National Park, Georgia,

Captain Edward C. Carter, Assistant Surgeon, will proceed to Chattanooga, Tennessee, for the purpose of establishing a general hospital in the Chattanooga Park Hotel, to be known as the Leiter General Hospital, in accordance with such instructions as he may receive from the Surgeon-General of the Army.

Captain William D. Crosby, Assistant Surgeon, will report to the Major General, Commanding the Dept. of the Pacific, for duty with the expedition to the Philippine Islands.

Acting Assistant Surgeon Edwards C. Poey, U. S. Army, ordered to Tampa, Florida, for duty.

Acting Assistant Surgeon J. R. Shannon, U. S. Army, ordered to Tampa, Florida, for duty.

The order assigning Acting Assistant Surgeon T. S. Dabney, U. S. Army, to Tampa, Florida, is revoked, and he is ordered to Jackson Barracks, La., for duty.

Acting Assistant Surgeons Richard P. Strong, and Henry E. Wetherill, U. S. Army, ordered to Tampa, Florida, for duty.

Acting Assistant Surgeon Edward Schreiner, U. S. Army, ordered to Fort McPherson, Ga., for duty in General Hospital.

Acting Assistant Surgeon Frederick McG. Hartsock, U. S. Army, ordered to U. S. Hospital Ship Relief.

Captain Alfred E. Bradley, Assistant Surgeon, ordered to Camp Alger, Falls Church, Virginia, for duty with 2d A. C.

Captain Edgar A. Mearns, Assistant Surgeon, ordered to Camp George H. Torney, Chickamauga National Park, Georgia.

Acting Assistant Surgeon James B. Ferguson, U. S. Army, ordered from Olivia, Minn., to Fort Yellowstone, Wyo., for duty.

Acting Assistant Surgeon Rupert Norton, U. S. Army, ordered to Fort McPherson, Georgia, for duty in General Hospital, at that place.

Acting Assistant Surgeon, A. H. Mann, U. S. Army, will proceed from Springfield, Illinois, to Key West, Fla., and report for duty in General Hospital, at that place.

Acting Assistant Surgeon Ezequiel de la Calle, U. S. Army, will proceed from this city, to Tampa, Florida, and report to the Commanding General 7th Army Corps, for assignment to duty.

Acting Assistant Surgeon Robert E. Williams, U. S. Army, will proceed from San Francisco, Cal., to Angel Island, Cal., and report for duty, he will also render medical attendance to the garrison at Fort Baker, Cal.

Acting Assistant Surgeon W. Hoepfner Winterberg, U. S. Army, will proceed to Alcatraz Island, Cal., and report for duty.

Acting Assistant Surgeon John B. Darling, U. S. Army, will proceed from St. Paul, to Fort Snelling, Minn., and report for duty.

Acting Assistant Surgeons A. R. Booth, Joseph A. Tabor and T. S. Dabney, U. S. Army, are relieved from duty at New Orleans, Louisiana, and ordered to Tampa, Fla. for duty with U. S. Troops at that place.

Major Louis W. Crampton, Surgeon, will proceed to Tampa, Florida, and report in person for duty to Major General William R. Shafter, U. S. Vols. Commanding the 5th Army Corps.

Major Valery Harvard, Surgeon, will proceed to Tampa, Florida, and report in person to Major General Joseph Wheeler, U. S. Volunteers, Commanding the Cavalry Division, at that place for assignment to duty as Chief Surgeon.

Acting Assistant Surgeons Francis M. C. Usher and E. A. de Lipcsey, U. S. Army, will proceed to Key West, Florida, and report in person to Major William R. Hall, Surgeon in charge of the General Hospital at that place, for duty.

Acting Assistant Surgeon C. L. G. Anderson, U. S. Army, will proceed from Hagerstown, Md., to Newport News, Virginia, and report for duty with Light Batterys A, and C. Penn. Vols.

Major George H. Torney, Surgeon, is assigned to duty in command of the U. S. Hospital Ship Relief.

Acting Assistant Surgeon S. Melville Waterhouse, U. S. Army, is relieved from duty at Fort Hamilton, New York, and ordered to Fort Myer, Virginia, for duty in General Hospital at that place.

The order assigning Major Robert H. White, Surgeon, to duty with the Philippine expedition is revoked.

Acting Assistant Surgeon Burke L. Johnson, U. S. Army, will proceed from Kenton, Ohio, to Fort Thomas, Kentucky, and report for duty in the General Hospital at that place.

Acting Assistant Surgeon Walter Whitney, U. S. Army, will proceed from Chicago, Illinois, and report in person to the Commanding Officer, Fort Sheridan, Illinois for duty at that post.

Major Philip F. Harvey, Surgeon, will proceed to Tampa, Florida, and report in person to Major General William R. Shafter, Commanding the 5th Army Corps, for assignment to duty as Chief Surgeon of one of the divisions of that Corps.

Captain John L. Phillips, Assistant Surgeon, is relieved from duty at Fort Walla Walla, Washington, and ordered to Alcatraz Island, Cal.

Captain Thomas U. Raymond, Assistant Surgeon, is relieved from duty at Fort Canby, Washington, and assigned to duty with the expedition to the Philippine Islands.

Captain William P. Kendall, Assistant Surgeon, is relieved from duty at Fort Brown, Texas, and ordered for duty with 9th Cavalry in the field at Tampa, Fla.

Captain Henry A. Shaw, Assistant Surgeon, is relieved from duty at the Brigade Hospital in the field at Tampa, Florida, and ordered for duty in General Hospital, Key West, Florida.

The following assignments of officers of the Medical Department are made:

To 1st Army Corps, Lieutenant Colonel Rush Huidekoper, U. S. Volunteers.

2nd Army Corps, Lieutenant Colonel Alfred C. Girard, U. S. Volunteers.

3d Army Corps, Lieutenant Colonel John Van R. Hoff, U. S. Volunteers.

4th Army Corps, Lieutenant Colonel Robert M. O'Reilly, U. S. Volunteers.

5th Army Corps, Lieutenant Colonel Benjamin F. Pope, U. S. Volunteers;

6th Army Corps, Lieutenant Colonel Nicholas Senn, U. S. Volunteers.

7th Army Corps, Lieutenant Colonel Louis M. Maus, U. S. Volunteers.

1st Lieutenant William E. Richards, Assistant Surgeon, having reported to the Surgeon-General, in compliance with orders, will proceed to Mobile, Alabama, and report in person to the Commanding General, 4th Army Corps, for duty in the field with the 5th Cavalry.

Captain Joseph T. Clarke, Assistant Surgeon, will proceed to Tampa, Florida, and report in person to Major-General William R. Shafter, U. S. Volunteers, for assignment to duty.

Acting Assistant Surgeon Francis W. Harrell, U. S. Army, will proceed from this city to San Francisco, California, and report to the Commanding General of the expedition to the Philippine Islands, for duty.

The following named officers of the Medical Department will proceed to San Francisco, California, and report for duty with the expedition to the Philippine Islands:
Lieutenant Colonel Henry Lippincott, Deputy Surgeon General.
Captain William O. Owen, Assistant Surgeon.
Captain Edward R. Morris, Assistant Surgeon.
1st Lieutenant Henry Page, Assistant Surgeon.

The following named officers are detailed to represent the Medical Department of the Army at the annual meeting of the American Medical Association to be held in the city of Denver, Colorado, June 7 to 10, 1898:

Lieutenant Colonel Alfred A. Woodhull, Deputy Surgeon-general.

Major Curtis E. Munn, Surgeon.

Acting Assistant Surgeon Jose M. Delgado, U. S. Army will proceed from this city to Tampa, Florida, and report for duty with the U. S. troops at that place.

Acting Assistant Surgeon Douglas F. Duval, U. S. Army, will proceed from this city to West Point, N. Y., and report for duty at the U. S. Military Academy.

Acting Assistant Surgeon S. Melville Waterhouse, U. S. Army, will proceed from this city to Fort Hamilton, N. Y., and report for duty at that station.
Major W. B. Davis, Surgeon, is assigned to duty in charge of the general hospital at Fort Meyer, Virginia, in addition to his duties as Surgeon at that post.

Acting Assistant David Baker, U. S. Army, will proceed from Waltonville, Illinois, to Fort Thomas, Kentucky, and report for duty in the general hospital at that place.

Acting Assistant Surgeon George H. Richardson, U. S. Army, will proceed from this city to San Francisco, California, and report in person to the Commanding General of the expedition to the Philippine Islands, for duty.

Acting Assistant Surgeon Arthur Jordan, U. S. Army, will proceed from Richmond, Virginia, to Mobile, Alabama, and report for duty with troops in the field at that place.

Major William H. Corbusier, Surgeon, is relieved from duty at Angel Island, California, and assigned to duty as Acting Medical Purveyor of the expedition to the Philippine Islands.

Captain Charles B. Ewing, Assistant Surgeon, will proceed at once to New Orleanss, La., and report to the Commanding Officer 5th Cavalry for duty.

Acting Assistant Surgeon Frederick J. Combe, U. S. Army, will proceed from Brownsville, Texas, to Tampa, Florida, and report for duty with troops in the field at at that place.

Acting Assistaut Surgeon Clarence J. Manly, U. S. Army, will preceed from this city to Fort Thomas, Ky., and report for duty in the general hospital at that place.

Acting Assistant Surgeon Ira A. Shiner, U. S. Army, will proceed from this city to Fort Myer, Virginia, and report for duty in the general hospital at that place.

THE MILITARY SURGEON

A SUPPLEMENT TO THE

NATIONAL MEDICAL REVIEW

UNDER THE CHARGE OF

COLONEL WILLIAM H. FORWOOD,

Assistant Surgeon-General, United States Army.

VOL. I. WASHINGTON, D. C., AUGUST, 1898. NO. 6.

Original Articles.

THE MODERN TREATMENT OF GUNSHOT WOUNDS IN MILITARY PRACTICE.

BY NICHOLAS SENN,

Lieut. Col. U. S. V.; Consulting Surgeon with the Army in the Field.

(Continued.)

Gunshot Wounds of the Abdomen.—The greater part of this paper will be devoted to this subject as recent discoveries and improvements in surgery have done more for the succesful treatment of visceral wounds of the abdominal organs than for the injuries of any of the organs contained in the remaining large cavities of the body. The triumphs that have signalized the practice of civilian surgeons in the operative treatment of intra-abdominal injuries must be repeated on the battlefield. I look hopefully for many successful results in the operative treatment of gunshot wounds in military practice. I will in this connection limit my remarks to penetrating wounds, taking it for granted that when patients suffering from abdominal wounds are brought to the field hospitals, the surgeons in charge will consider it their imperative duty to make a positive distinction between penetrating and non-penetrating wounds, before assuming the responsibility of opening the abdomen. In the discussion of penetrating wounds of the abdomen I shall quote freely from the forthcoming third edition of the American Text Book of Surgery, from the chapter which treats of this subject. Sword, bayonet and other stab wounds will diminish in frequency with development of the modern scientific warfare. The penetrating wounds of the abdomen that will come under the observation of the military surgeon will, with few exceptions, be wounds inflicted with the modern small calibre projectile. The mural wounds, the wounds of entrance and exit will be small, too small for digital exploration. It is perhaps superfluous to make the statement here to the effect that a *penetrating wound of the abdomen should never be probed either for diagnostic or therapeutic purposes* If any doubt exists as to whether or not the bullet has entered the abdominal cavity, it is far better and safer to dilate the track by the use of the knife, relying on the probe as a guide, than to work in the dark with the probe and by doing so increasing the possibilities of infecting the peritoneal cavity. Quite recently the assertion has been made by prominent surgeons that laparotomy should be performed in all cases when it can be shown that penetration has occurred. It must, however, be admitted that, in the absence of serious visceral lesions, penetrating wounds of the abdomen are injuries from which the patients are very likely to recover without operative treatment, and

that when such patients are subjected to laparotomy, death may occur solely in consequence of the operation. It is undoubtedly true that in most cases of spontaneous recovery after penetrating gunshot wounds of the abdomen, the favorable termination has been due to absence of serious visceral lesions, which some hold to be universally present in such cases. A number of years ago I made a series of experiments on the cadaver for the purpose of demonstrating that occasionally a bullet can traverse the abdominal cavity in certain directions without producing visceral wounds that would warrant laparotomy.

The cadaver, a marasmic male adult, was placed in the erect position against a wall and the shooting was done with a 38 calibre rifle at a distance of 30 feet. The bullet was fired in every instance in an antero-posterior direction and invariably passed through the body, sixteen shots were fired and examination of the abdominal cavity carefully made by following the track of each bullet showed that four of the bullets traversed the abdominal cavity without injuring the stomach or intestines or any of the large abdominal vessels. In each of these four experiments, the bullet entered the abdomen at or a little above the umbilical level. In all experiments in which the bullet entered below the umbilical level, intestinal perforations were found. Absence of visceral lesions has also been demonstrated during an operation or at the post-mortem. During the Graeco-Turkish war several cases of gunshot wounds of the abdomen recovered under a conservative plan of treatment. In nearly all these cases the bullet entered the abdomen above the umbilicus, the most favorable location for the escape of the intestines from the missile, the patient being in a standing position. In two out of sixteen cases of penetrating gunshot wounds of the abdomen, which came under the observation of the writer, the absence of visceral injuries of the gastro-intestinal canal was demonstrated by the use of the hydrogen gas test, and most of these patients recovered without resort to laparotomy. Clinical experience and the result of experiment show conclusively that laparotomy should not be performed simply because a bullet has entered the abdominal cavity, but that its performance should be limited to the treatment of intra-abdominal lesions which without operative interference would tend to destroy life. A bullet which passes through the lower part of the abdomen from side to side or obliquely is almost sure to produce from four to fourteen perforations of the intestines, while absence of dangerous visceral complications may be inferred with some degree of probability if it crosses the abdominal cavity in an antero-posterior diection at or a little above the umbilical level.

Symptoms.—The general symptoms in cases of penetrating gunshot wounds of the abdomen, with the exception of those due to profuse hemorrhage, furnish very little information in reference to the existence or absence of visceral complications. Severe shock may attend a simple non-penetrating wound, and it may be wanting or at least slight, in cases of multiple perforation of the intestines. It is not an uncommon occurrence for a patient, who has received a penetrating wound of the abdomen, to walk several blocks, or even a number of miles, without a great deal of suffering and without showing any symptoms of shock, and yet for a number of intestinal perforations to be revealed at a subsequent operation or autopsy. Vomiting occurs with equal frequency in parietal wounds and in simple penetrating wounds as when the viscera have been injured. Vomiting of

blood points to the existence of a wound of the stomach. Pallor is present in all penetrating wounds of the abdomen soon after the receipt of the injury, and it is only more pronounced when produced at least in part, by sudden and severe hemorrhage. Pain is a very unreliable and often misleading symptom, as it may be moderate or almost completely absent soon after the injury has been inflicted even when multiple perforations are present. The pulse at first is slow and compressible in all cases and nothing characteristic in its qualities has been observed even if the stomach and intestines have been wounded. Hemorrhage caused by wounds of any of the large organs, as the spleen, liver, or kidneys, gives rise to acute progressive anaemia, small rapid pulse, cold clammy perspiration, dilated pupils, yawning, vomiting, and, in extreme cases syncope and convulsions. The local symptoms are of no more value in determining the existence of visceral injuries in penetrating wounds of the abdomen than are the general symptoms which have just been enumerated. External hemorrhage is slight or entirely wanting unless an artery or a vein in the abdominal wall has been injured. The bleeding from visceral wounds gives rise to accumulation of blood in the peritoneal cavity—occult or internal hemorrhage. This can be recognized by physical signs, which denote the presence of fluid in the free abdominal cavity, and by general symptoms, indicating progressive anaemia: increasing pallor of the face and of the visible mucous membranes, small, feeble pulse, superficial sighing respiration and dilated pupils. Wounds of the stomach often cause hemorrhage into this organ and hematemesis. Blood in the stools seldom follows hemorrhage into the bowels sufficiently early, from intestinal wounds, to be of any diagnostic value.

Circumscribed emphysema in the tissues around the track has been regarded as an important sign of the existence of intestinal perforation. This symptom is misleading and absolutely devoid of diagnostic value, as this condition has frequently been observed in non-penetrating wounds of the abdominal wall resulting from the entrance of air into the loose connective tissue, or later, as gas formation, as one of the results of putrefactive infection. The accumulation of any considerable quantity of gas in the peritoneal cavity sometimes can be recognized by the disappearance of the normal liver dullness, caused by the presence of gas between the surface of the liver and the chest wall. This condition has been sought for in cases of perforating wounds of the abdomen as a diagnostic sign, and if found has been taken as a sure indication of the existence of visceral wounds of the gastro-intestinal canal. This is not, however, always the case. Adhesions between the surface of the liver and chest wall may have existed before the injury was received, or the amount of gas present may be insufficient to give rise to this sign. The escape of the contents of the wounded stomach or intestines through the external wound is a rare occurrence and is possible only when the external wound is large and straight and when it corresponds with the location of the visceral wound, or in the event of pre-existing adhesions between the abdominal wall and the injured portion of the gastro-intestinal canal. External extravasation occurs more frequently in wounds of the large than the small intestines. When this symptom is present it is conclusive proof of the existence of a visceral wound of the gastro-intestinal canal and the character of the extravasation will furnish reliable information as to the anatomical location of the visceral injury. With the exception of the last mentioned symptom, and the indications pointing to the necessity of arresting internal hem-

orrhage, there is nothing about the local or general symptoms of penetrating gunshot wounds of the abdomen that would enable the surgeon to decide with any degree of certainty, soon after the injury was received, whether or not visceral injuries existed, and, consequently, whether laparotomy should or should not be performed.

Diagnosis.—If a gunshot wound has penetrated the abdominal cavity and the general symptoms and local signs lead us to suspect the existence of dangerous intestinal hemorrhage, *no time should be lost in further efforts to make an accurate anatomical diagnosis*, as sufficient evidence has been obtained to warrant a laparotomy for the purpose of preventing death from hemorrhage by the direct surgical treatment of the visceral injuries. If no such urgent indication presents itself, it is desirable that the existence of visceral lesions demanding surgical treatment should be ascertained before the patient is subjected to the additional risks incident to a laparotomy. Since a simple penetrating wound of the abdomen is an injury from which the majority of patients recover without operative treatment, and since visceral wounds of the gastro-intestinal tract are attended by such frightful mortality without surgical interference, the practical value and importance of a correct diagnosis before deciding upon a definite plan of treatment become obvious. It is apparent, that if some reliable diagnostic test could be applied in cases of penetrating wounds of the abdomen which would indicate to the surgeon the presence or absence of visceral lesions of the gastro-intestinal canal, the indications for aggressive or conservative treatment would become clear. The writer has shown by his experiments on animals, and later by his clinical experience in the treatment of a number of gunshot wounds of the abdomen, that rectal insufflation of hydrogen gas can be relied on in demonstrating the existence of perforations of the gastro-intestinal canal before opening the abdomen. He has shown conclusively that, if the abdominal muscles are completely relaxed under the influence of a general anesthetic, hydrogen gas or filtered air can under safe pressure be forced from the anus to the mouth if no perforations exist, and if such are present, the gas will escape into the peritoneal cavity where its presence can be readily detected by the physical signs characteristic of a free tympanites or by its escape through the external opening. Theoretical objections have been made against this diagnostic test on the ground that it occasionally fails in demonstrating the existence of a perforation and that it is instrumental in causing fecal extravasations. In reply to this I must say that it has never failed in my hands in making by its aid a correct diagnosis and the fallacy of the second objection I have shown repeatedly by its effect on animals. Hydrogen gas is a non-toxic substance, endowed with valuable inhibitory antiseptic properties, and is absorbed from all the large serous cavities and the connective tissues within a few hours. Pure zinc and sulphuric acid should be used in generating the gas which is collected in a rubber balloon holding at least four gallons. The rubber balloon used for this purpose is square in shape and is connected with the rectal tip by means of a rubber tube six feet in length and supplied with a stop-cock near its proximal end. In applying the test, an assistant presses the margin of the anus against the rectal tip while another assistant forces the gas along the intestinal tube by pressing or sitting on the rubber balloon. The passage of the gas through the ileo-cæcal valve takes place under a pressure of two and a half pounds to the square

inch and is announced by a distinct gurgling sound which can always be distinctly heard by applying the ear or stethoscope over that region. If the rectum or colon have been perforated the gas will not reach the small intestines as it will escape into the peritoneal cavity under less pressure than is required in rendering the ileo-cæcal valve incompetent. As soon as the gas reaches a perforation large enough to permit its escape, it will enter the peritoneal cavity and escape through the external wound, if this has been freely laid open down to the peritoneum. If the external wound is in a location which points to an injury of the stomach, this organ should be insufflated through a rubber stomach tube, and if this test proves negative, it is to be followed by rectal insufflation. It is impossible to inflate the intestines to any extent from the stomach.

Treatment.—The propriety of surgical interference in cases of penetrating gunshot wounds of the abdomen will depend on one of three things :

1. General condition of the patient.
2. Dangerous internal hemorrhage.
3. Wounds of the stomach or intestines large enough to permit of extravasations.

If the patient is pulseless and presents other indications of approaching death, operation is unjustifiable, as it would only hasten the end, bring reproach upon surgery, and undermine the confidence in the life saving value of operations among the troops.

Dangerous internal hemorrhage that will come to the notice of military surgeons in gunshot wounds of the abdomen, will be the cases in which the vascular organs of the abdomen, the liver or spleen, or some of the larger vessels of the mesentery or omentum have been injured. Delay in such cases is dangerous. The abdomen should be opened promptly and the hemorrhage arrested. The symptoms are apt to be unusually severe if the hemorrhage is sudden, progressive if the loss of blood is gradual. In the latter instance it may be prudent to watch the case for some time for more pressing indications, as it is well known that spontaneous arrest of hemorrhage may occur and even large quantities of aseptic blood are removed from the peritoneal cavity in a short time. Visceral lesions of the gastro-intestinal canal, large enough to permit of extravasation, are with very few exceptions mortal wounds the existence of which can leave no doubt in the mind of the surgeon to resort promptly to abdominal section as offering the only chance to save life.

Preparation of Patient.—A patient suffering from a gunshot wound of the abdomen should be properly prepared before he is subjected to laparotomy. If the stomach is filled with food a salt water emetic should be given for the purpose of emptying its contents, or, better still, this can be done by the use of the stomach siphon tube. The rectum and colon must be emptied by a copious enema of warm water to which a tablespoonful of salt has been added. The unloading of the gastro-intestinal canal will not only facilitate the operation but will have a favorable influence in securing rest for the injured part. A hypodermic injection of gr. ¼ of morphia and gr. 1-30 of strychnia should be given shortly before the anesthetic is administered, as these remedies in the doses specified assist the action of the anesthetic, secure rest for the intestine and sustain the action of the heart. If the patient is much prostrated, two ounces of whiskey diluted with four ounces of warm water should be given by the rectum. The whole abdomen should be thoroughly disinfected. Be-

fore and during the operation the use of external dry heat will do much in preventing shock and in aiding the peripheral circulation. Compresses, towels and several gallons of warm normal solution of salt must be provided. The operator should do the work with as little assistance and as few instruments as possible as the danger of infection in emergency work is apt to be proportionate with the number of assistants employed and number of instruments used. Hands, instruments, suturing material, in fact everything that is to be brought in contact with the wound must be sterilized. In military surgery silk will have the preference over catgut A hospital tent with a floor will be an admirable operating room in all semi-tropical climates. Anesthesia should be commenced with chloroform until the patient is under its full influence when it should be continued with ether.

Incision.—In the majority of cases the median incision should be made as it affords advantages which give it the preference. It should always be selected in cases of gunshot wounds of the stomach, and where the wound of entrance is located near the median line. A median incision affords most ready access in the treatment of wounds of the small intestine. If the insufflation test is used, it will prove sometimes of value in deciding upon the location of the incision. If, in gunshot wounds of the upper portion of the abdomen, direct inflation of the stomach through an elastic tube reveals the existence of perforation of this organ, the median incision should be selected. If rectal insufflation yields a positive result before the gas has passed the ileo-cæcal valve, the incision should be made over the wounded portion of the colon which is usually indicated by the course of the bullet. A wound in the transverse colon can be found and dealt with most effectually through a high median incision; perforation of the cæcum or of the ascending colon calls for a lateral incision directly over the wounded organ, while a lateral incision on the left side is indicated, if from the direction of the bullet, it is evident or probable that the colon below the splenic flexure is the seat of the visceral injury. Laparotomy for the arrest of hemorrhage should always be done by making a long median incision, which will afford the most direct access to the different sources of hemorrhage. Very often it will be advisable to make the incision in the line of the wound of entrance, more especially in cases where a lateral incision is indicated from the location of the wound, from the course of the butlet, and perhaps from the results obtained by the insufflation test.

Arrest of Hemorrhage.—In opening the abdomen in the treatment of internal hemorrhage, the surgeon undertakes a task the gravity of which it is impossible to foretell. To do the work quickly and well he must be perfectly familiar with the anatomy of the abdominal organs, their source of blood supply and must have full knowledge of all hemostatic resources, the indications for their selection and details of application. Profuse intra abdominal hemorrhage resulting from penetrating gunshot wounds of the abdomen, is more frequently of parenchymatous and venous than arterial origin. Wounds of the liver, spleen, kidneys and mesentery give rise to profuse and often fatal hemorrhage. After opening the peritoneal cavity it is often very difficult to find the bleeding points as the blood accumulates as rapidly as it is sponged out and it becomes necessary to resort to special means in order to arrest profuse bleeding sufficiently to find the source of hemorrhage. One of two means should be employed:

1. Intra-abdominal digital compression of the aorta.

2. Packing the abdominal cavity with a number of large sponges or gauze compresses. Intra-abdominal compression of the aorta below the diaphragm can be readily made by an assistant introducing his hand through the abdominal incision which in such a case must be larger than under ordinary circumstances. Compression made in this manner will promptly arrest the hemorrhage from any of the abdominal organs for a sufficient length of time to enable the surgeon to find the source of hemorrhage and carry out the necessary treatment for its permanent arrest. Hemorrhage from a perforated kidney may demand a nephrectomy if it does not yield to tamponade. If the tampon is used, an incision in the lumbar region must be made for the removal of the tampon, and the parietal peritoneum should be sutured so as to exclude the peritoneal cavity from the renal wound. Wounds of the liver are sutured with catgut, cauterized with the actual cautery, or tamponed with a long strip of iodoform gauze or a typical Mikulicz tampon, in either case the gauze is to be brought out of the wound and utilized as a drain. A wound of the spleen, if the hemorrhage does not yield to ligature, suturing or tamponade, necessitates splenectomy. Very troublesome hemorrhage is often met with in wounds of the mesentery. When multiple wounds of the mesentery and visceral wounds of the stomach or intestines are the cause of the hemorrhage, it is a good plan to pack the abdominal cavity with a number of large sponges, napkins, or compresses of gauze to each of which a long strip of gauze is securely tied, these strips being allowed to hang out of the wound in order that none of the sponges or compresses may be lost or forgotten in the abdominal cavity after the completion of the operation. The sponges or compresses make sufficient pressure to arrest parenchymatous oozing, as well as venous hemorrhage if they are placed at different points against the mesentery, and between the intestinal coils. The sponges are removed one by one from below upward, and the bleeding points secured as fast as they are uncovered. The ligation of mesenteric and omental vessels, both arteries and veins, should be done by applying the ligature *en masse*. A round needle or Thornton's curved hemostatic forceps are the most useful instruments for this purpose. Catgut as a rule should not be relied upon in tying a mesenteric vessel, as it is greatly inferior to fine silk. If hemorrhage is profuse, this must be attended to before anything is done in the way of finding or suturing the visceral wounds. Troublesome hemorrhage from a large visceral wound of the stomach or intestines is best controlled by hemming the margin of the wound with catgut or fine silk. In hemorrhage in localities not accessible to ligature and not amenable to tamponade, pressure forceps are applied and allowed to remain twenty-four to forty-eight hours. When used in this manner the instrument must be long enough to be brought out of the wound and is then incorporated in the dressing. For the purpose of finding and facilitating the removal of the instrument a strip of gauze is tied to the handle.

Search for Perforations.—A number of cases have been recorded, and I am sure many more have occurred, in which laparotomy was performed, one or more perforations sutured, and the post-mortem showed that a perforation was overlooked, death resulting from extravasation and diffuse septic peritonitis. Such experiences are by no means limited to the practice of novitiates but have occurred in that of men of large experience and in well equipped

first class hospitals. The handling of the entire length of the gastro-intestinal canal in the search for perforations requires time, adds to the shock of the injury and operation, and, even if done by experts and with the utmost care, a perforation may escape the attention of the operator and become the sole cause of death. If the surgeon adopts this plan of detecting perforations the work should be done systematically. The ileo-cæcal juncture is the best land mark for beginning the search. From here the small intestine is traced in an upward direction examining loop after loop and returning the intestine as soon as examined so as to avoid extensive eventration which always adds greatly to the danger of the operation. The large intestine is traced from the ileo-cæcal region downward. In one of my cases perforation of the rectum was found low down in the pelvis, which certainly would have been over looked if I had not used the inflation test which promptly revealed not only its existence but also its exact location. If the air or gas test has been employed with a positive result before the abdomen is opened, there will be no difficulty experienced in finding the first opening. If the stomach was inflated directly through an elastic tube, and the test has shown the presence of a perforation, a median incision is made from the tip of the ensiform cartilage to the umbilicus and the stomach is drawn forward into the wound.

If no perforation is found in the anterior wall the insufflation is repeated, and the escaping air or gas will direct the surgeon to the perforation. Through this perforation the stomach should again be inflated in search for a second and possibly a third perforation. In searching for intestinal wounds by the aid of inflation, further inflations should be suspended as soon as the lowest perforation has been found. If possible the perforated portion of the intestine should now be brought forward into the wound, and, after emptying the intestine below the perforation as far as possible of its contents including gas or air, the bowel is compressed below the perforation by an assistant and the intestine higher up is inflated through the wound. As a matter of course a perfectly aseptic glass tube should be inserted into the rubber tube in place of the rectal tip. The inflation is now carried as far as the second opening when the first perforation is sutured and after disinfection and emptying the intervening portion of its gas the intestine is replaced in the abdominal cavity. Further inflation is now made through the second opening and if a third wound is found the second is sutured, and so on until the entire intestinal canal has been thoroughly subjected to the test. By following this plan extensive eventration is rendered superfluous, and the overlooking of a perforation is made impossible, likewise the objection to the test that reduction of the intestines owing to distension with gas or air is overcome if the intervening sections between the perforations are emptied of their contents before suturing the wound.

Suturing of Perforations.—The materials for suturing are an ordinary sewing needle and fine aseptic silk. Catgut should be dispensed with in all intestinal work. Trimming the margins of visceral wounds is not only superfluous but absolutely harmful, as it requires a useless expenditure of time and may become an additional source of hemorrhage. The same can be said of the Czerny-Lembert suture. All that is required in the treatment of a visceral wound of the stomach and intestine is to turn the margins of the wound inward and to bring

into opposition healthy serous surfaces by the continuous or interrupted seromuscular sutures, which should always be made to include fibres of Halsted's submucosa. From four to six stitches to an inch will suffice. If possible wounds of the stomach should be sutured in the direction of the blood vessels and transverse suturing of the intestine is necessary for the purpose of preventing constriction of the lumen. Defects an inch and a half in length can be closed on the convex side in this manner without fear of causing intestinal obstruction, while much smaller defects on the mesenteric side usually necessitate a resection, not only because the vascular supply in the corresponding portion of the intestine would be inadequate, but also because a sufficiently sharp flexion might be produced at the seat of suturing to become the immediate mechanical cause of intestinal obstruction.

Enterectomy.—Enterectomy is often indicated in cases of double perforation and in marginial wounds in the mesenteric border. If in cases of multiple perforation it should become necessary to make a double enterectomy, and the intervening portion of the small intestine is not more than two or three feet in length, it is best to resect the same, as the immediate effect of the single operation will not be as severe as that of a double resection with a corresponding double enterorrhaphy. After resection, the continuity of the intestinal canal should always be restored by a circular enterorrhapy, using for this purpose the Czerny-Lembert suture. Strips of sterile gauze are preferable to clamps in preventing extravasation during the operation. The gauze strip is passed through a small button-hole made with hemostatic forceps in the mesentery near the intestine and tied with sufficient firmness to prevent escape of intestinal contents.

Irrigation of the Abdominal Cavity.—This is necessary only if fecal extravasation or escape of stomach contents has taken place, an accident which if it has not occurred before the abdomen was opened, should be carefully avoided during the manipulations of the wounded intestines. Flushing the peritoneal cavity with warm sterilized water or normal salt solution not only clears it of infectious material, but acts at the same time as a stimulant to the flagging circulation. The current must be sufficiently strong not only to fill the peritoneal cavity quickly but to flush it out. After the completion of the irrigation the patient is placed on his side, and in this position the fluid contents of the abdominal cavity are poured out. The cavity is then rapidly dried by large sponges wrung out of a weak sublimate solution (1: 10,000) or Thiersch's solution. Some surgeons have practically abandoned flushing of the abdominal cavity and rely almost exclusively on sponging in removing pus and extravasated fecal material. Others are partial to leaving the physiological solution of salt in the cavity, paying no attention to the peritoneal toilet practiced with conscientious care by all surgeons only a few years ago.

Drainage.—To drain or not to drain is the all absorbing topic among surgeons whose time and attention are largely engaged in abdominal work. I wish to place myself on record as being a strong advocate of drainage in all cases of abdominal surgery in which we have reason to believe that contamination of the peritoneal cavity has taken place by extravasation of contents of the gastro-intestinal canal or pus. In gunshot wounds of the abdomen complicated by visceral injury the probability that infection has occurred must not be lost sight of, and the only safe course to pursue under such circumstances is to drain where you are in

doubt. Cases which require irrigation should always be drained. Other indications for drainage are visceral wounds of the liver and pancreas and the existence of parenchymatous hemorrhage which cannot be controlled by any of the different hemostatic measures. A glass drain reaching to the bottom of the pelvis loosely packed with a strip of iodoform gauze answers the purpose. Occasionally multiple drains are indicated. The Mikulicz drain is to be depended upon in arresting troublesome surface oozing. Drainage must be suspended at once, or gradually with the cessation of the primary wound secretion.

Suturing of External Incision.—Incisions in the median line are rapidly closed with one row of silk or silkworm-gut sutures, which are placed close together and include all the tissues of the margins of the wound. Incisions made in any other place are to be closed by buried catgut sutures uniting the peritoneum and muscular layer separately and a superficial row of silkworm gut sutures uniting all the tissues except the peritoneum. A large hygroscopic compress composed of sterile gauze and cotton held in place by broad strips of adhesive plaster constitutes the proper dressing. The sutures are removed at the end of the second week and the patient must not be allowed to leave the bed before the expiration of the fourth week. Four weeks in bed and the wearing of a well fitting abdominal support for 3 to 6 months are the most reliable precautions against the occurrence of a post operative ventral hernia. The drainage opening should be closed with secondary sutures, inserted at the time of operation, as soon as the drain is removed, otherwise a ventral hernia will be almost sure to develop in the scar at the former site of the drainage tube.

After-treatment.—Absolute rest must be strictly enforced. Opiates must be given in sufficient doses to quiet the peristaltic action of the intestines. Stimulants must be used to counteract the effect of shock and to restore the enfeebled peripheral circulation. Absolute diet must be observed for at least 48 hours. During this time a mixture of brandy and ice water in small doses frequently repeated, or acid champagne, is agreeable to the patient, as it quenches thirst, relieves nausea and exerts a favorable influence on the circulation. If more active stimulation is called for to relieve shock and the effects of hemorrhage, whisky, strychnine, ether, musk, or camphor can be injected subcutaneously or by the rectum, while the peripheral circulation is restored by applying dry heat to the extremities and trunk. The subcutaneous infusion of one to two pints of normal salt solution is an excellent restorative of special therapeutic efficiency in cases where the vital forces are depressed and life is in danger from the effects of hemorrhage. Should symptoms of peritonitis set in, a brisk saline cathartic should be given at the end of forty-eight hours, as at this time the intestinal wounds will have become sufficiently united to resist the peristalsis provoked by the cathartic, while the removal of intestinal contents and the absorption of septic material from the peritoneal cavity thus attained are not only the most efficient means of averting a fatal disease, but also placing the wounds in the most favorable condition for rapid repair. Reopening the wound and secondary flushing have done little in arresting or limiting septic peritonitis. If the case progresses favorably, liquid food by the stomach can be allowed at the end of the second day, and light solid food at the end of the first week. Under ordinary circumstances no effort is made to move the bowels till the end of the third or fourth day. If early

feeding becomes necessary in marasmic or exsanguine patients, this can be done by rectal alimentation.

From the contents of the paper the following conclusions can be formulated:

1. In theory and practice military surgery is equivalent in every respect to emergency practice in civil life.

2. The wounded soldier is entitled to the same degree of immunity against infection as persons in civil life suffering from similar injuries.

3. The fate of the wounded rests in the hands of the one who applies the first dressing.

4. The first dressing should be as simple as possible including an antiseptic powder composed of boracic acid four parts, salicylic acid one part, a small compress of cotton, safety pins and a piece of gauze 40 inches square.

5. Any attempt to disinfect a wound on the battlefield is impracticable.

6. The first dressing stations and the field hospitals are the legitimate places where the work of the hospital corps and company bearers is to be revised and supplemented. All formal operations must be performed in the field hospitals where the wounded can receive the full benefits of aseptic and antiseptic precautions.

7. Probing for bullets on the battlefield must be absolutely prohibited.

8. Elastic constriction for the arrest of hemorrhage must not be continued for more than 4 to 6 hours for fear of causing gangrene.

9. The X-ray will prove a more valuable diagnostic recourse than the probe in locating bullets lodged in the body.

10. Gunshot wounds of the extremities must be treated on the most conservative plan, the indications for primary amputation being limited to cases in which injury of the soft parts, vessels and nerves suspend or seriously threaten the nutrition of the limb below the seat of injury.

11. Operative interference is indicated in all penetrating gunshot wounds of skull.

12. Gunshot wounds of the chest should be treated by hermetically sealing the wound under the strictest aseptic precautions.

13. Laparotomy is indicated in all cases in penetrating gunshot wounds of the abdomen where life is threatened by hemorrhage or visceral wounds and the general condition of the patient is such as to sustain the expectation that he will survive the immediate effects of the operation.

TOWARDS THE PREVENTION OF DIARRHŒA IN HOT CLIMATES.

By Lieut. Col. Alfred A. Woodhull, Medical Department, U. S. Army.

There are several necessary conditions affecting their health that our troops must encounter in Cuba, which are so important that it is hardly possible to think of them too seriously or too frequently. One is yellow fever. People who have not had yellow fever and who remain, even for a moderate period, in an active yellow fever region will, almost without exception, acquire the disease. The motive of their residence, whether commerce, philanthropy, or war, makes very little difference. It is certain that soldiers, who cannot select their surroundings, will be promptly attacked by it. It is equally certain that those who attempt to take care of such sick in the yellow fever district will themselves, regardless of whatever precautions they may adopt, ultimately sicken. It is also well established that to transfer yellow fever patients during their illness, is greatly to diminish their already moder-

ate chance of recovery. Further, thirty per cent of yellow fever patients will die under any treatment that has yet been tried on an extended scale. Therefore, we may know what to anticipate when military operations are conducted within the yellow fever zone; and however we may lament them our lamentations will not alter the consequences.

The second is the malarial poison, whose effects range from the languor of "spring fever" to the fulminant pernicious attack that crushes at one blow. The treatment of malarial fevers is well enough understood in theory, although many medical officers from non-malarial districts in the beginning will fail to appreciate the importance of the frequent and the sufficient use of quinine. A logical scheme for the prevention of such disease is also pretty well wrought out; but its application presents so many difficulties that it is after the event that much of what might be done is best recognized. Notwithstanding the desirable course and the possible course cannot always coincide, energy and and tact will frequently approximate them over considerable ranges.

The third great physical evil that an invading army, and especially a northern army, will encounter in the tropics is, collectively, the intestinal fluxes. The depressing influences of excessive moist heat, and of the ever-present malarial force predispose to their inception. The unaccustomed and sometimes ill-prepared ration may be au irritant. Fatigue, bad water, distinctly unwholesome food, and the numberless inconveniences of the field aggravate the tendency and increase the disability once set up.

One of the most active direct causes of field diarrhœa and dysentery, to which the conditions just mentioned predispose, is the difference between the diurnal, and the nocturnal temperature, or the immediate influence upon the relatively unprotected abdomen of great heat followed by comparative cold. That extremes of heat or of cold are apt to lead to diarrhœa is matter of common experience. But in a hot climate there are three forms of danger that require to be particularly guarded against, viz: 1, The direct heat of the sun which, striking through thin clothing, leads, as would other local applications of heat, to local congestion; 2, The evaporation of excessive perspiration which promptly reduces the surface temperature with the effect of a local chill; 3, However hot the day may be, at some time in the night the temperature falls a number of degrees from the maximum, and there may be relative chilling of the exposed surfaces.

This is intensified in the natural depression of sleep when covering is displaced. Following such conditions are the alternate dilatation and contraction of the abdominal capillaries, and the accompanying congestion and depletion of the mucous surfaces whose continued derangement means disease. These temperature conditions are by no means the sole but are distinct causes of the diarrhœa of hot regions.

Here, as elsewhere, prevention is better than cure. Prevention, so far as the matter of atmospheric changes goes, means the preservation of an equable temperature, partly by the absorption of perspiration and chiefly by guarding against chill. This implies that the abdomen should be specially protected, and that the whole person should not be unduly cooled, particularly at night. Cooling at night follows sleeping without proper covering, and generally occurs after midnight. The remedy is a trustworthy detail to draw over the sleepers the discarded blankets. The flippant objection is that soldiers are not children to

be watched as a mother cares for her nursery. The answer is that in such matters untried soldiers are practically children, toward whom a captain worthy to command stands in a parental relation.

A more important agency is the constant use of special clothing over the abdomen to check the chilling, whether from evaporation of perspiration or from the coolness of the night. It should also shield against the direct heat of the day.

The general use of the cummerbund by the natives of India, and of the cholera belt by the British armies and European civilians within the tropics is the practical recognition of its propriety, if not its necessity. The most convenient form is that of an apron which can be worn directly next the skin, adapts itself to the figure, and is retained by tapes tied around the waist. It should be of two thicknesses of thin, soft, all-wool flannel, sufficiently large to cover the surface from the waist to the groin, and extending a little to each side. These would better be too large than too small at first, to allow for shrinkage. Each person should have two, to provide for cleanliness, by wearing them alternately. They are best cleansed by exposure to the air and beating with a bunch of twigs, and occasional careful washing. The ordinary soldier cannot well care for more than two. An apron of this kind is self-adjusting, it does not interfere with the clothing, and it can be worn with equal facility by the mounted and the foot soldiers.

A somewhat elaborate pattern, having the same object, has been sent out for preparation by the Aid Societies as a gored and fitted bandage that encircles the waist. This is an actual bandage and as such is objectionable. The discomfort of a narrow bandage under the waistband more than counterbalances any hypothetical advantages that its proximity to the kidneys may suggest. The pattern in question is too shallow, and from its form will be apt to roll up into a string. Appliances like this that are to be fitted require fitting to the individual, which is manifestly impracticable, and when not fitted they irritate. The simple apron which has been tested, can be worn with comfort, and when it has once been fairly worn it is abandoned with reluctance. There is no logical reason why the government, which provides hoods and buffalo overcoats in one latitude, should not supply these articles in another. But, as the government that decides what should, and what should not be done is, after all, human, and one can only remember that fallibility is its necessary attribute. Meanwhile the beneficence of energetic women might easily assume less useful forms than these unpretending protectors.

A special variety of the same appliance sometimes used to check diarrhœa already begun, consists of such an apron with aromatics quilted between the layers. These slight, stimulating spices, when worn near the skin, lead to gentle excitement, sometimes extending to an irritation of the surface, thus causing a derivative flow of blood from the bowels, and possibly leading to some absorption of the medicines. The use of spiced aprons is not advisable in health, and if provided at all they should be mere adjuncts to the hospital for service with light cases of sickness.

Selections.

Treatment of Native Wounded at Dargai.--Davidson.

There were 66 cases of gunshot wounds among the native soldiers admitted to hospital. (A) Flesh wounds of head and neck, 5; of trunk, 17; of upper extremity, 9; of lower extremity, 19. (B) Penetrating wounds of abdomen, 2. (C) Wounds complicated by fracture of bones of head, 1; of trunk, 1; of upper extremity, 5; of lower extremity, 7. The only cases which ended fatally were the two penetrating wounds of the abdomen, and one case where 6 wounds were received one of which caused fracture of the bones of the left forearm. Operative procedures were limited to incisions for the extraction of bullets. The missiles were mostly Snider, ricochets and a few round bullets. The treatment consisted in the avoidance of all possible probing or handling of wounds, the cleansing of wounds and their neighborhood with perchloride of mercury solution, the dusting of the wounds with iodoform, and the subsequent application of a dressing of boric lint, wrung out of perchloride of mercury solution, and antiseptic wool. Among the wounds treated were the following: 1. Gunshot wound of forehead causing depression of outer table and a fissured fracture; recovery. 2. Gunshot wound (probably Lee-Metford); entrance wound 3 inches above and in front of right great trochanter, and exit wound in middle line over centre of sacrum; no probing of wound nor drainage; application of above dressing; both wounds healed in a fortnight without pus. 3. Gunshot fracture of femur, ball passing out; no drainage; above dressing and splint; recovery with ¾ inch shortening. The successful result of treatment in these and other cases is to be attributed to the fact that these soldiers were wounded early in the campaign and had not become debilitated through fatigue and exposure. The wounds were promptly treated on the field and contamination thereby prevented. The climate was dry and healthy and the wounded were kept in the field hospital until healing was well advanced.—Davidson (J) Surgeon-Captain, I. M. S. Brief notes of the treatment of the native wounded at Dargai. Brit. M. J., 1898, i, 1389.

Physical Characteristics of Ten Thousand Men.--Adams.

In answer to the call of the War Department (April 26, 1898) for volunteers, over ten thousand Illinois National Guardsmen were mobilized at Springfield April 27, 1898. On May 2 the work of physical examination, preliminary to mustering into the United States service, was begun by a board composed of Capt. H. P. Birmingham, M. D., U. S. A.; Col. Nicholas Senn, Surgeon General; and Lt.-Col. C. C. Carter, Ass't. Surg. Gen'l. I. N. G. The first day was devoted to the examination, as to the physical and professional qualifications, of the medical officers of the eight regiments present. These, later on, assisted in the examination of the rank and file of their respective commands, which was carried out at the rate of 850 a day until 9,901 had passed through the hands of the board. The recruit, in every instance, was examined nude, the chest expansion taken by one regimental surgeon, the eyes and ears examined by a second, and the head, mouth, pharynx, and neck by a third. The thoracic organs and general aptitude for active service were passed upon as was also the condition of the abdomen and lower extremities. Pursuant to instruction from the Surgeon General the writer has classified the physical defects discovered, as noted on the 9,901 papers preserved. Enlisted men were rejected for any condition which would or might be a cause of physical disability. In the case of officers, the examinations were no less rigid, but rejections were made only for disability actually present, such physical defects as might later become disabilities being carefully noted on the muster roll for the protection of the government. The total number of rejections for physical disability was 747, less than 8 per cent of the total. The causes for rejection were as follows: General constitutional conditions:—poor physique, 177; rheumatism, 13; syphilis, 14; tubercular diathesis, 3; premature senility, 4; obesity, 6; ancient sunstroke, 5; pediculosis, 2; chronic alcoholism, 1; chronic cu-

taneous affections, 3; asymmetry, 1; not stated, 6. Eyes:—Myopia, 13; strabismus, 10; defective vision, precise condition not stated, 35; leukoma, 6; keratitis, 1; tumor of orbit, 1; purulent conjunctivitis, 2; trachoma, 1; artificial eye, 1; cataract, 1. Ears:—Otitis purulenta, 21; defective hearing, 24; mastoid abscess, 2. Teeth:—Extensive caries, 18; extensive loss of, 30. Nose:—Rhinitis, chronic, 1; dermoid cyst, 1; deformity with obstruction, 1. Throat:—Chronic pharyngitis, 2. Neck:—Tubercular adenitis, 3. Chest:—Deficient expansion, 6; consolidation of lungs, 7; mitral lesions, 15; weak heart, 1. Deformities:—Flat chest, 6; rhachitic, 14; muscular atrophy, 2; old gunshot wound, 3; deformity not specified, 2; chronic ulcer of, 1. Spinal column:—Curvature, 4. Upper extremities:—Ankylosis shoulder, 2; ankylosis elbow, 2; synovitis of elbow, 1; loss of fingers, 4; ankylosis of fingers, 4; drop-wrist, 1; deformity not specified, 1. Abdomen:— Hernia, oblique inguinal, 129; ventral following operation, 2; recurrent and chronic appendicitis, 12; pot belly, 3; chronic diarrhea, 1. Genitals:—Varicocele, large, 5; varicocele with atrophy of testis, 1; hydrocele, painful, 8; cryptorchid, partial, painful, 1; tubercular testis, 2; epididymitis, 2. Venereal disease:—Gonorrhea, 18; gleet, 1; suppurating bubo, 1; chronic orchitis, 1. Lower extremities:—Talipes, 3; flat feet, excessive or painful, 33; varicose veins, 22; varicose ulcer, 3; unhealed gunshot wound, 1; deformed toes, 4; ununited fracture great toe, 1; bunions, 1; corns, 1; ingrowing nail, 1; ankylosis hip, 1; synovitis knee, 3; loss of foot at ankle joint, 1.

In the preliminary examinations of recruits made by the medical officers of the different regiments before leaving their home stations many cases of "bicycle heart" were discovered and not allowed to enlist. These were characterized by hypertrophy and dislocation of apex beat with irregular or rapid beat. In view of the sensational statement in the lay press that "hundreds of young men had been refused enlistment in the United States Volunteers at Springfield, for 'tobacco heart' caused by cigarette smoking" it is worth noting that no case of the kind is recorded in the examination at Springfield, and we have no knowledge of any rejections for that cause in the preliminary examinations at Chicago or elsewhere in the State. We make this statement on behalf of the truth, not of the cigarette.

We find the average extent of chest expansion in 9,901 cases 3.67 inches. This average for chest expansion is high, compared with the figures given by Baxter (Medical Statistics, Washington, 1875), who calculates a mean mobility for the chest in 315,620 U. S. whites at 2.807 inches; the mean of 501,608 men of twenty-four nativities being 2.781. In our notes we find that 4,067 men are recorded as having chest mobility of four inches or over, 801 men of five inches or over, 104 men six inches or over, twelve men seven inches, two men 7¼ inches, and one 7½ inches.

Chest mobility does not always mean lung expansion, and should not be taken by itself as a measure of lung capacity. Most of the chest expansions of over four inches are produced, not by inflation of the lungs, but by forcing the diaphragm upward, and the chest walls outward by contraction of the abdominal muscles.

The statement of Baxter that "It may be observed as something more than a mere coincidence, that in a number of cases of rejection for hernia an unusual degree of mobility of chest was found to exist" was fully verified in our experience, for many of the largest chest expansions were noted as accompanied by hernia.—Adams (C.) Lt.-Col. and Ass't. Surgeon-General, Ill. N. G., Medical Standard, Chicago, 1898, xxi, 9.

Heart Disease amongst Soldiers in India.—Moore.

The annual report of the Sanitary Commissioners with the Government of India for 1895 shows that there were 154 admissions for vulvular disease of the heart amongst European troops out of a strength of 71,031; of these 11 died and 64 were invalided. This equals an admission rate of 2.16 and a death rate of 0.15 per 1,000. Among native troops in the same year there were 32 admissions, 12 deaths, and 10 invalided out of a strength of 129,211 or 0.24 and 0.09 per 1,000. Thus, among European troops the admission rate was 9 times and the death rate nearly twice as great as among

the natives. The difference is the more remarkable in that a considerable number of the European troops most prone to diseases and derangements of the heart are weeded out before being sent to India. In the native army there is no such weeding out process. The only way to account for this undue proportion of heart disease, is on the hypothesis that there is something in Indian service especially likely to lead to valvular disease or else these cases are wrongly diagnosticated. The latter theory is very probable, since according to the above statistics, about 50 per cent of the cases of organic heart disease recovered and were able to return to duty. The error lies in diagnosticating every case in which there is a heart murmer as chronic valvular disease, although many of these murmurs, as has been shown by Broadbent, are perfectly innocent of significance. Broadbent says that the criterion of pseudo-mitral disease is the absence of displacement of the apex beat and of accentuation of the pulmonic second sound, or undue right ventricular impulse, together with absence of symptoms. Army surgeons take upon themselvea great responsibility in returning to duty a man who has an unmistakable valvular murmer, and though many of those discovered may be innocent or transient, the error in diagnosis, if any, is on the side of over caution.—Moore (R. R. H.) Surgeon-Major, A.M.S. Heart disease amongst soldiers in India. Indian Med. Rec. 1898, xiv, 54.

Rubber Gloves in Operative Surgery.

At the recent Congress of the German Surgical Society, Perthes of Leipzig said that in emergency cases and in military surgery gloves are indispensable; in both there is a lack of time for thorough sterilizing of the hands, and in the latter there is usually added a lack of sufficient water. He exhibited a pair of silk-rubber gloves, which he had enclosed in a white "stocking," together with which it could be drawn on, so preventing the hands from coming in contact with the outside of the glove. Döderlein of Tübingen remarked that impermeable gloves had a distinct place in emergency cases such as sudden hemorrhage and the like, when there was no time to disinfect the hands. Zoge-Manteuffel had used the rubber gloves of the chemist for a long time and found a decrease in the already small number of septic cases.—Phila. M. J., 1898, i, 824.

Mortality in the Spanish Army in Cuba, During the Year 1897.

The following statistics have been abstracted from a report of Dr. W. F. Brunner, U. S. M. H. S.

The mortality from yellow fever in the five military hospitals in Havana during the year 1897, was 2,583, which represents about 10,000 cases. The deaths from yellow fever in the other cities on the Island, during the calendar year 1897, were 3,451, making the total deaths from the above named disease in military hospitals for 1897, 6,034. This mortality represents about 30,000 cases.

The deaths from small-pox in the city of Havana alone, including soldiers and civilians, during the calendar year 1897, were 1,115.

The heaviest death-rate from enteric fever existed at Havana and Matanzas. It is estimated that 2,500 soldiers died from this disease during the year. There were fully 7,000 lost to the Spanish army from malarial influences, or what the medical men of the army designate pernicious fever and "caynexia paludica." The two diseases, enteritis and dysentery, caused no less than 12,000 deaths in the field and military hospitals; nearly 5,000 deaths occurring in the five military hospitals in Havana alone. In Havana, over 100 cases of glanders occurred among the soldiers, and glandered horses are seen daily on the streets of Havana and other cities of the Island.

The following figures show the total mortality of the Spanish army in Cuba, for the year 1897, and are approximately correct:

Yellow fever	6,034
Enteric fever	2,500
Enteritis and dysentery	12,000
Malarial fevers	7,000
All other diseases	5,000
Deaths from all diseases	32,534

To the above enormous death-rate must be added at least ten per cent. of the 30,000 soldiers invalided home in the last stage of the different diseases enumerated above, during the year.—Atlantic Medical Weekly, 1898, ix, 327.

THE MILITARY SURGEON

A SUPPLEMENT TO THE

NATIONAL MEDICAL REVIEW

UNDER THE CHARGE OF

COLONEL WILLIAM H. FORWOOD,

Assistant Surgeon-General, United States Army

VOL. I. WASHINGTON, D. C., SEPTEMBER, 1898. NO. 7.

Original Articles.

THE ORGANIZATION OF THE MEDICAL DEPARTMENT OF THE ARMY IN THE FIELD.

BY COL. CHARLES R. GREENLEAF,

Chief Surgeon, Army in the Field.

The opposition to caring for the sick and wounded in the field, which originated in our army during the Civil War and is now in use by the armies of all civilized nations, is due in my opinion to the necessary lack of knowledge on the part of civilian medical men of the actual conditions of a battlefield. A large majority of medical officers both in the volunteer and regular army belong to the generation that has grown up since that war. Their military experience has been confined to service with the National Guard or at frontier posts and in Indian campaigns, under each of which conditions the regimental feeling becomes very strong; and through association they have imbibed as much of the *esprit du corps* and are as wedded to the regimental traditions as are the line officers; consequently any movement which severs them and their belongings from what might be termed a military home is looked upon with disfavor.

To the medical officer who served with troops in the field during the Civil War this matter is looked at from an entirely different point of view. He recalls with a peculiar horror the sufferings which the regimental hospital system brought upon his comrades in the first two years of the war. The scenes that followed the battles of Cold Harbor, White Oak Swamp, Savage's Station and Malvern Hill where wounded were often necessarily abandoned to their fate, when regimental hospital supplies were thrown away for lack of transportation and when doctors were either overworked or idle through lack of system, can never be effaced from his memory, and when he contrasts them with the operations of the ambulance corps during and after later battles, notably at Gettysburg, he cannot but wonder why anybody should for an instant think of the establishment of a regimental hospital in time of war. Medical Director Letterman tells us regarding the battle of Gettysburg, "that notwithstanding the great number of wounded, amounting to 14,195, I know from my own observation, that not one wounded

man of all that number was left on the field within our lines early on the morning of the 4th of July;" he further says, regarding the system of Regimental Hospitals, "from the field of battle above all other places, confusion is most liable to ensue, and unless some method is observed by which certain surgeons have specific duties to perform, and every officer has his place pointed out beforehand and his duty defined and held to a strict responsibility for its proper performance, the wounded must of course suffer."

In the modern organization all medical officers, men of the hospital corps and the medical and surgical supplies belonging to an army corps are regarded as a composite body for the performance of a specific work. To each regiment there are assigned a surgeon, usually the one belonging to the regiment, a hospital steward and a private of the hospital corps, a medical and surgical chest containing carefully selected materials for the treatment of mild cases, and dispensary tent—this for the purpose of the current medical work of the regiments. In each division there is established a field hospital with a maximum bed capacity of 200 beds and to it are assigned 6 surgeons, 6 non-commissioned officers and 90 hospital corps privates. The commissioned personnel of the hospital is organized into an executive staff, an operating staff, specially selected for skill in that part of their profession, and a medical staff. Here are gathered all the regimental medical supplies not immediately needed for service with the regiment, but subject to the call of its surgeon without the formality of requisitions and receipts. This field hospital is subdivided into three brigade sections, the personnel and supplies being so distributed that when occasion requires a complete section with its medical officers, hospital corps men and medical and surgical supplies may be quickly detached for needed service. Auxiliary to the field hospital there is organized an ambulance company where all the ambulances and wagons with their animals and drivers are gathered for drill and service. To each ambulance company is assigned 6 officers, 7 non-commissioned officers and 104 hospital corps men, two officers belonging to the line of the army to act as quartermasters, being responsible to the Government for the property of the company. This company is also arranged in three brigade sections for the same purpose as is the field hospital. The entire medical department is under the control of the chief surgeon of the corps, and to every officer below him in station a specific duty is assigned. In the practical operations of this organization while troops are lying in camp, the morning sick call is held at the regimental dispensary, the slightly sick remaining with the regiment while the more severe cases are sent in ambulances to the field hospital for treatment. Thus regiments are freed from the care of the very sick, and the well men are not subjected to the demoralizing effect always produced in camp by the presence of their suffering comrades. Should the army move, the regimental surgeon has only to care for his two chests of medical supplies and his dispensary tent. While the different regiments are falling into line for the march the attendants in the field hospital and its auxiliary ambulance company are packing and loading their effects, the very sick being left in a section of the hospital for future disposition or sent farther to the rear by sections of the ambulance company. The entire organization of division field hospital and ambulance company falls into line immediately in the rear of the artillery and ammunition and takes its way with the

moving command to the front. Arriving at the front the regimental surgeon with his attendants and a few supplies, packed in what is known as the "orderly pouch," takes his station as near to the firing line as is consistent with safety, to render first aid to those whom he can reach. In the meanwhile the chief surgeon of the corps designates a point nearest to the firing line at which the ambulance company may take station, and still farther to the rear locates his division field hospital. By the time the troops are in line for action these two organizations have been unloaded from their wagons, tents pitched, cots prepared and food and medical supplies placed in their proper positions for immediate use. The officer in charge of the ambulance company receives his instructions from the chief surgeon to send his ambulances, provided with litters and the necessary number of hospital corps men, to such points on the line as appear to be especially threatened and there awaits the opening of the engagement. As the tide of battle moves, so does the advance section of the medical department—the litter bearers gathering the wounded from points where they may have fallen and bringing them to previously designated points, known as collecting stations, where first aid is given to them. Hemorrhages are checked, broken bones are temporarily dressed and the badly wounded carried in litters to the ambulances. As each ambulance is filled it is driven to the field hospital where its load is deposited and it returns to its proper station. After the battle is over—and as a rule all battles cease at dark—details of men from troops that have not been engaged are called upon in such numbers as may be necessary, either as full regiments or even as brigade organizations, to go over the field and collect the wounded at the points heretofore mentioned as collecting stations where they are taken charge of by the members of the hospital corps. The wounded are cared for in the division field hospitals and those whose wounds are very severe are in due course of time sent farther to the rear into the general hospitals, while those who are likely to recover are kept in these hospitals until their cases are completed. The advantage which this organization possesses over the regiment system rests upon the fact that the chief surgeon of the corps, who is always present with the general commanding and knows the progress of the battle, may send any number of divisional organizations or any parts of divisional organizations to parts of the line which are most heavily engaged. He may send a section from the division field hospital and the ambulance company to one part of the field, and, on receipt of information that the troops there are hard pressed, he may send another organization to the same point and if necessary may add the divisional field hospital from another part of his corps, the forces at his command being ample and sufficient when handled in this manner of caring for any number of men who may be wounded. Under the regimental system this procedure was impossible, because no regimental hospital could be detached from its regiment, and it not infrequently happened that a regimental hospital might be overwhelmed with wounded, while the officers and men of the hospital belonging to its neighbor would be idle and helpless in the way of assistance, since they themselves might at any moment be called upon for similar service to their own people.

As the value and proven efficiency of this system becomes better understood our medical officers are giving it their

cordial support and the last weekly reports that I received from the various army corps show that the work is progressing satisfactorily in spite of the limited number of men which we have, since enlistmentment and transfer into the hospital corps have not been sufficient to fully supply our needs.

While at Tampa I inspected the field service of the 5th corps both before and after they went on board the transports and found them, under the able administration of Chief Surgeon Pope, to be in an efficient condition notwithstanding the lack of many supplies which could not reach them owing to the crowded condition of the freight trains. This is the command which is now operating before Santiago and the newspapers tell us that the reserve field hospital is established at Jarauga, the division field hospitals being presumably closer with the troops, where I have every reason to believe they are doing a good service. In addition to this field organization we have fully equipped under the personal direction of Surgeon General Sternberg the hospital ship "Relief," which is provided with large quantities of medical and surgical supplies of all kinds and has all the necessary modern appliances for the comfort of the sick, such as ice machines, water condensers, apparatus for the use of the Roentgen ray, etc. The transport Olivette has also been fitted up as a temporary hospital and the Secretary of War has given authority to use any of the transports returning from Cuba for the convenience of the sick. On this side we have a thoroughly equipped hospital train located at Tampa and the military posts at Forts McPherson, Myer and Thomas have been converted into general hospitals, while extensive hospital accommodations have been made at other places, so that our people may be well assured that Surgeon General Sternberg has provided everything needful to secure efficient service for the sick and wounded, in which particular I feel satisfied our army stands second to none in the world.

MEDICAL ORGANIZATION AND ADMINISTRATION OF THE SECOND ARMY CORPS.

The following orders incident to the organization and administration of the Medical Department of the 2nd Army Corps, stationed at camp Russell A. Alger, Falls Church, Va., were issued by Lieutenant-Colonel Girard, Chief Surgeon of the Corps.—[Ed.]

Circular No. 2. June 3, 1898.

The Surgeon-General of the Army directs the following circular to be issued for the information of the medical officers of this command:

"Separate registers of patients and monthly reports of sick and wounded should be made for the regular and volunteer troops.

"Surgeons in charge of field hospitals should, therefore, be provided with two registers, one for the entry of cases belonging to the Regular Army, the other for those of the Volunteer Army.

"Reports of sick and wounded will not, therefore, be required to be made in duplicate. They should be forwarded through chief surgeons to the Surgeon-General."

Circular No. 1. June 10, 1898.

To Division Surgeons:

You are directed to notify at once the brigade surgeons in your division, to notify the regimental surgeons that they may retain in each regimental dispensary two cots. Should additional cots or articles for the comfort of the sick be needed at those dispensaries, the regimental surgeons will make requests for the same upon the chief surgeon, through the brigade and division surgeons, stating the reasons for these necessities, and the requests will be complied with if possible.

Circular No. 4. June 11, 1898.

To Chief Surgeons of Divisions:

You will inform the regimental surgeons that the War Department is fully determined on abolishing the regimental hospital system, which has proved a failure and caused much unnecessary suffering during the Civil War, and has been abandoned by all nations which keep their armies prepared for war. An evasion or non-compliance with orders on this subject is, therefore, not only prejudicial to good order and military discipline, but unwise and unpatriotic in pretending to assume a knowledge superior to that of the well established authorities and setting personal views and interests above the common cause. You will inform the regimental surgeons through their brigade surgeons that the 1st and 2nd division hospitals are now ready for the reception of patients. They are in charge of about one fourth of the force of volunteer surgeons, and if patients do not receive skillful care and treatment, no one but the surgeons of the Volunteer Army will be to blame. To guard against neglect and inexperience, you are directed to send to me a list of names of surgeons prominent in their profession in your respective divisions, from whom a consulting board for each division hospital will be chosen. They will be called in consultation in every case of severity, and their decision will be final subject to my approval. You will report to me a list of equipment turned into division hospitals by the regiments, with a list of the regiments contributing.

Circular No. 5. June 11. 1898.

To Chief Surgeons of Divisions:

I am directed by the chief surgeon of the corps to notify you that should any medical officer under your command be found inattentive or incapable of performing the duties to which he has been assigned, you are to notify this office and he will be relieved at once.

Very respectfully, your obedient servant,

OGDEN RAFFERTY,
Capt. and Asst. Surgeon U. S. A.

Circular No. 6. June 11, 1898.

To Chief Surgeons of Divisions:

No issue will be made from the supply depot except on the order of the chief surgeon of corps. Requisitions must be examined by the chief surgeons of divisions, who will make requisitions conform to the supply table and bring them to corps headquarters at their daily visits of consultation at 10 a. m. Requisitions must, therefore, be in their offices before 9 a. m.

Circular No. 7. June 13, 1898.

A complete set of orders must be kept ready for reference in each regimental, brigade and division surgeon's office. I will complete the set of the division surgeons, and they must see that the other files are complete and make demand on me for missing copies. Each regimental surgeon will be held accountable for carelessness in preserving files.

Circular No. 8. June 15, 1898.

The regulations prescribe that enlisted men who desire to be transferred to the hospital corps should apply to the surgeon of the regiment, who will prepare the papers for them if he considers them suitable. The transfer is not a new enlistment, but their time of service is the same as if they had continued to serve in their regiments. Unless unforseen war emergencies occur, they will be assigned to duty with their regiments or in the division hospitals or ambulance company with their own division. They may at the termination of the war get their discharge upon application. Early application is desirable in order to enable regimental commanders to refill their regiments at once; but applications for transfer will be entertained at any time. Regimental surgeons will cause this circular to be posted in their regimental dispensaries.

Circular No. 9. June 15, 1898.

Any patients needing medicines which are not on the supply table for regiments may be sent to the division hospital for treatment, unless the surgeon finds in that table a substitute.

Circular No. 10. June 19, 1898.

The men of the hospital company on

duty in division hospitals, with company or with train, will mess with the hospital company.

Circular No. 11. June 21, 1898.

The chief surgeon has been requested to express his views in writing for the information of all concerned as to the methods of assignment which will be followed after transfer of volunteers to the hospital corps. The men transferred will be assigned to the hospital company of the division to which their former regiment belongs. In the brigade sections they will be assigned to regimental subsections composed of men from their former regiments. The result is that if their former division, brigade or regiment is detached they go with it. If the quota of 2 per cent. in each regiment is not transferred, the deficient number is made up from enlistments at large. It is, therefore, to the interests of regiments to recommend for transfer their full quota, so that in case of sickness or injury, they may be attended by their former comrades. In a regimental command there will be a regimental hospital, in a brigade command a brigade hospital, and in a division command a division hospital equipped as prescribed in the field supply table.. The widest possible publicity should be given this circular in regiments.

Circular No. 12. June 22, 1898.

Men discharged from Division Hospitals must be sent to their regiments in an ambulance with a private of the hospital in charge, who will take with him a blank receipt to which he will obtain the signature of the adjutant on turning over the man. On return to the hospital he will hand the receipt in person to the executive officer.

Circular No. 13. June 21, 1898.

No blanks must be used in making requisitions for medicines. A sheet of paper is sufficient; small sheets for requisitions small, and large sheets for requisitions large.

Circular No. 14. June 21, 1898.

When surgeons are detailed as acting brigade surgeons they will continue to perform duty with their regiments in addition to their duties as acting brigade surgeons.

Circular No. 20. June 28, 1898.

The medical officers of this command are reminded that the personal report of station duty for the month is due at this office on the last day of the month. Prompt compliance will facilitate the work of this office.

Circular No. 21. June 24, 1898.

Whenever death occurs in any of the hospitals, the consulting board will make report in writing to this office, detailing the circumstances, their opinion as to the diagnosis and treatment and the fact of their being called in consultation, and if not, the reason why.

Circular No. 22. June 24, 1898.

Instruction in the papers pertaining to the medical department will be given as follows: Monday, Wednesday and Friday at 2 p. m. in First Division Hospital. Tuesday, Thursday and Saturday at 2 p. m. in Second Division Hospital. Medical officers and hospital stewards are directed to attend when their duties permit.

Circular No. 17. June 26, 1898.

All persons of experience agree that if a flannel bandage is worn around the abdomen at night in Cuba, the danger of fever and dysentery is greatly reduced. Medical officers will give this information the widest publicity in their commands. I have received an offer of flannel bands from the Woman's Patriotic Aid Society of Washington and have requested them to send me 4,000 bandages for General Garretson's brigade which is supposed to leave next week for Cuba. They will be issued, on the receipt of the regimental surgeon, to his brigade for distribution. Application for the remainder of the command will be made and like action taken.

Circular No. 18. June 26, 1898.

All property of the Medical, Quartermaster Ordnance Departments must be accounted for to the Government by the property officer of division hospitals. His vouchers for issues will be the

memorandum receipt of the officer in whose immediate care the property is. When an acting hospital steward or private is detailed from his company of the hospital corps and sent away permanently, the property officer will make descriptive list in detail and send it through military channels to the senior medical officer of the command to which the man is attached.

Circular No. 19. June 26, 1898.

The following extract from Circular Letter of Col. Charles R. Greenleaf, Chief Surgeon, Army in the Field, is published for the information and guidance of the medical officers of this command :

"Headquarters of the Army,
"Washington, D. C., June 23, 1898.

"All tents from patients suffering with these diseases (measles and mumps) should, while standing, be washed on the inside with a solution of bichloride of mercury, 1 to 1,000 ; cots, folding field furniture and other property requiring it should be similarly treated. Blankets should be wet with this solution, and every article so treated should be allowed to stand exposed thoroughly to the action of the air and sun for a period of three days. It is believed that with these directions infected property might with safety be afterwards used for ordinary purposes."

This order must be receipted for by every medical officer of your division.

June 27, 1898.

To the Division Surgeons :

You will cause all patients affected with infectious sexual diseases to be isolated in separate tents. They will have to be provided with means of washing their own utensils, which in no instance must be sent to the kitchen ; also you will see that the nurses, provided the patients are able to wash themselves with soap and water, shall see that each case of disease has his own wash basin and towel ; those only who are unable to wash themselves will be washed by the nurses. This order must be rigidly enforced and charges preferred against any nurse who is found violating it. The Chief Surgeon regrets to learn that these ordinary rules which are enforced in official hospitals have been neglected in division hospitals. It shows either indifference or lack of knowledge on the part of the medical officers, and carelessness of this character will result in the recommendation for discharge of medical officers offending. You will communicate this circular to medical officers and obtain their receipt therefor.

Circular No. 24. June 29, 1898.

The following will be the routine of duty for the hospital companies of this command :

5.30 reveille—roll call.
6.00 breakfast.
6.15 general police of camp.
6.45 to 7.15 calisthenics.
7.30 to 8.30 litter drill.
9.00 to 11.00 instruction in first aid.
12.00 dinner.
1.00 to 2.00 instruction in bandaging.
2.00 to 4.00 ambulance and field drill.
5 00 supper.

The following men are excused from the exercises : 2 cooks for division hospital, 12 for ambulance corps ; the nurses on duty in the wards at the rate of 1 nurse for 8 patients ; the office orderlies ; the clerks in the chief surgeon's office ; any men specially designated by the chief surgeon of the corps.

Circular No. 25. June 29, 1898.

The following will ordinarily be the details of hospital stewards and privates of the hospital corps in division hospital :

1 hospital steward ; 1 acting hospital steward in dispensary ; 1 private ; 1 hospital steward as police sergeant ; 1 hospital steward in charge of mess ; 1 hospital steward in charge of nurses ; 1 hospital steward in charge of property ; 1 hospital steward in charge of records ; 1 nurse to each 8 patients.

Special details when more are needed will be made from the hospital company.

The ordinary details in the hospital company are :

1 hospital steward as first sergeant ; 3 hospital stewards, one in charge of each brigade section of the hospital company ; 2 cooks ; 1 clerk to first sergeant;

12 watchmen—daily detail. They will report to the police sergeant as "Old Guard Fatigue" the second day after their watch; the changes of watches will take place at reveille.

July 1, 1898.

Chief Surgeon, 2nd Division,

SIR:—You will please, without unnecessary delay, cause the detail of line officers to be made, called for by Par. 2nd, General Orders 76, and have the senior of the two appointed ordnance officer and have all the Quartermaster's and Ordnance property pertaining to the division hospital transferred to him. You will also direct him to obtain the necessary tentage to quarter all the medical officers on duty at the hospital, and give directions to have a mess started for those who desire to take their meals there: the mess will be under charge of the executive officer. This action will be taken at the earliest practicable moment, and I desire a report in writing as soon as it is completed.

S. O. No. 14. July 3, 1898.

The board instituted by Order No. 13, June 30, 1898, will make a general investigation as to the presence of typhoid fever in camp, ascertain positively the authenticity of the cases, enumerating by name, and the probable origin of the disease in each case. They will recommend such means, if any be needed, to limit the spread from avoidable causes.

Circular No. 39. July 5, 1898.

The attention of the medical officers of this command is drawn to Par. 122, Manual for the Medical Department, an extract from which reads as follows: Quicklime is also a valuable disinfectant and may be substituted for the more expensive chloride of lime for disinfection of typhoid fever, cholera, etc. For this purpose freshly prepared milk of lime should be used, containing about one part by weight of hydrate of lime to eight of water.

The necessary lime can be obtained at the supply depot.

Circular No. 40. July 6, 1898.

Prior to completing and forwarding certificates of disability, medical officers should see that the paper is properly made out by the captain, and that no conflict exist, if possible, in the opinions expressed. A short consultation with the captain will often prevent endless delay and clerical work. Attention is invited to the requirement that certificates be made out in the surgeon's own handwriting and to the implied requirement that the senior medical officer on duty with the regiment prepare the certificates.

July 6, 1898.

Surgeon-General, U. S. A.,
Washington, D. C.,

SIR: I have the honor to report that I believe the number of medical officers for this command would be insufficient in active service. They are now all employed either on duty with the regiments or in division hospitals, or in command of the ambulance companies, or on duty with them. This does not leave a single extra officer. This will be partly remedied eventually by the appointment of two volunteer surgeons in the regiments which are not completely officered or by the return of 8 surgeons who are on sick leave, but others will become sick or go on leave and a certain proportion of losses of this kind must be expected.

I, therefore, recommend that 6 acting assistant surgeons be appointed for duty in each division hospital. This will enable me to properly organize the ambulance service and the administrative part of the several hospitals and leave a margin for casualties. I believe that with full regiments two surgeons should be on duty with a regiment; the care of 1,300 men is too much for one man.

Circular No. 41. July 8, 1898.

The following correspondence is hereby published for the information of all concerned:

WAR DEPARTMENT,
ADJUTANT-GENERAL'S OFFICE,
Washington, D. C, July 2, 1898.

Surgeon-General, U. S. Army,

SIR: With reference to your endorse-

ment of the 4th ultimo, referring to this office a communication addressed to you by the chief surgeon of the Second Army Corps, June 1, 1898, requesting information concerning the uniform of medical officers of volunteers, I have the honor to inform you that the Secretary of War approves the views of the Quartermaster-General regarding this matter, which are as follows: This office is of the opinion that officers of volunteers generally, who are equipped with State uniforms, should be permitted to wear them until worn out, after which they should provide themselves with clothing conforming to regulations established by the War Department. Very respectfully,

H. O. S. HEISTAND,
Assistant Adjutant-General.

Circular No. 42. July 9, 1898.

The chief surgeon in his investigation through the camp noticed that not sufficient attention was paid to the police of the privies. An investigation will be made to-day by every regimental surgeon, who will make a report in writing to his brigade surgeon of the condition in which he has found the privies, and his action, if any, to remedy evils. The brigade surgeon will consolidate these reports and have them in the hands of the division surgeons at 6 o'clock this evening.

Circular No. 43. July 10, 1898.

Enlisted men of the hospital corps will not apply for passes direct to the chief surgeons of the medical department. The application must be made to and approved by the officer under whose immediate surpervision they are at the time. The passes must be signed in the same manner and under the same rules as for the troops of the line, and must have the approval of the chief surgeon of the division.

Circular No. 46. July 14, 1898.

Soiled towels at regimental dispensaries will be turned into the division hospital and clean ones issued in exchange. These soiled towels will be included in the washing of the hospital. Additional towels will be obtained, if necessary, from the supply depot. Towels will not be used for any other than legitimate purposes. Improper use and staining will be reported to this office by the chief surgeons.

July 15, 1898.

Adjutant-General, 2nd Army Corps,

SIR:—I have the honor to recommend that under General Orders No. 76, two lieutenants of the line be detailed as quartermasters and ordnance officers of the reserve hospital, 2nd corps, and be ordered to report to me for instructions.

June 18, 1898.

Adjutant General, 2nd Army Corps,

SIR:—I have the honor to recommend that if this camp is to be continued any length of time, different provisions be made for excreta and kitchen slops in place of the present sinks, as the accumulation of this enormous amount of decomposing matter will sooner or later breed disease in spite of the use of lime and dry earth.

As the cheapest and most effective expedient I recommend that sheds with earth closets be built; that a contract be entered into with some suitable party to remove every night the filled boxes and replace them at once with empty ones; that dry earth be used as a deodorant as heretofore; that slop barrels be furnished the companies; that, in order to make these slops of value, no articles such as papers, cans, broken bottles, etc., be thrown into the barrels, but be buried as is supposed to be done at present, that the privy sheds be made movable in case change of location is found desirable.

July 24, 1898.

Adjutant General, 2nd Corps,

SIR:—I have to recommend that the following order be issued:

"Upon the recommendation of the Chief Surgeon of the Corps, it is ordered that milk venders in this camp, prior to proceeding with their sale of milk, report at the division hospitals of the division where they propose to sell, for the sanitary examination of the milk.

"Division commanders will recommend their chief surgeons to designate a competent medical officer who will be detailed by order for this duty. He

will be supplied with a regimental hospital steward and make requisition upon the chief surgeon for the necessary apparatus. The milk venders will be given a permit, upon which each milk examination will be recorded.

"The examination will be made in such a manner as not to be onerous to the milk vender.

"The Prosost Marshal is charged with the necessary supervision of the execution of this order."

The reason for this request is that adulteration of milk with surface water and consequent occurrence of typhoid fever has been reported to the Chief Surgeon.

July 24, 1898.

Adjutant General, 2nd Army Corps,

SIR:—I have the honor to recommend that the following order be issued:

"Upon the recommendation of the chief surgeon of the corps it is ordered that the consulting and operating staff, established in the division, be designated as the Board of Medical Officers referred to in General Orders No. 100.

These staffs consist of the three senior medical officers in the division next to the division surgeon, excluding those detailed on special duty, by competent military authority.

July 25, 1898.

To the Chief Surgeon, 2nd Division:

You will please notify the medical officers on duty that division organizations are to send their reports and requisitions through your office.

Circular No. 56. July 26, 1898.

Chief Surgeons are directed to notify commanding officers of the ambulance company that a detail for the position of acting hospital steward is not one to be applied for.

Special Order No.— July 27, 1898.

Chief surgeons will instruct division hospital quartermasters to see that no ambulance leaves the ambulance park without one private of the hospital corps as orderly. The duty of this orderly should be to see that no unauthorized person rides in the ambulance, and, if it carries sick, give them the necessary care.

MEMORANDA RELATING TO OPERATIONS OF THE MEDICAL DEPARTMENT, U. S. ARMY.

Medical Officers.

The number of medical officers allowed by law is inadequate in times of peace. The total number allowed is one hundred and ninety-two. There are at present thirteen vacancies. The administration of the Surgeon General's office and the Army Medical Museum requires six. Eleven are on duty at medical supply depots and as chief surgeons of military departments. One is at the Soldiers' Home; fifty-six are at general hospitals, on hospital ships, and at garrisoned posts. Four have been disabled during the war by sickness. Five are on duty as chief surgeons of army corps. This leaves ninety-six medical officers available for duty with troops in the field. Of these, thirty-five have been appointed brigade surgeons of volunteers and are distributed among the various army corps.

This deficiency in regular medical officers has made it necessary to employ nearly four hundred contract surgeons, and more are being employed every day. Most of these doctors from civil life are doing good service, and many of them are thoroughly well-equipped physicians and surgeons with ample hospital experience; but it has been impossible to make a careful selection, owing to the great pressure of business in the Surgeon General's office, and the urgency has been so great that it has not been practicable to have examining boards to pass upon their qualifications.

In addition to this there have been appointed by the President, eight brigade surgeons with the rank of lieutenant colonel, twenty-four division surgeons with the rank of major, and sixty-five brigade surgeons; also three medical officers for each of the regiments of U. S. Infantry, Cavalry and Engineers. All volunteer regiments have three medical officers appointed by Governors of States.

General hospitals have been established at Key West, Fla., with a capacity

of 755 beds; at Fort McPherson, Ga., 1050; Fort Thomas, Ky., 432, Chickamauga Park (Leiter Hospital) 255; Fort Monroe, Va., 535; Fort Myer, Va., 308. In addition to this several hundred sick and wounded soldiers have been placed in the Marine Hospital on Staten Island and in civil hospitals in New York and Brooklyn; also nearly two hundred in the civil hospitals in Charleston, and a smaller number in civil hospitals in various parts of the country.

The Hospital Train, which was equipped for service June 22, and consists of ten tourist sleepers and a dining car, has made repeated trips from Camp Thomas, Tampa, and Fernandina with sick to the general hospitals at Fort McPherson and Fort Thomas and has proved to be most useful.

The Hospital Ship "Relief" was purchased May 18th, but owing to delays in preparing her for service did not sail from New York until July 2d. Four days later she arrived at Siboney with an ample supply of medical stores of all kinds and with 16 doctors. She returned to New York with a load of wounded and was then dispatched to Porto Rico. She is now returning to New York with 260 sick and wounded soldiers.

The Hospital Ship "Olivette" went with the 5th Army Corps from Tampa, Fla., to Santiago and brought a load of wounded from that port to New York. She returned to Santiago with supplies and is now en route to New York with 200 patients.

Sick and Wounded.

At the present time August 15, we have a full record of 40,520 cases of sickness and wounds that occurred among a mean strength of 154,028 men, during the months of May, June and July.

As the average of the 3 months probably 6 per cent of the troops were constantly sick.

Reports from Commands not yet represented in the statistics are expected daily.

Medical Supplies.

When the troops were ordered from their respective posts into the field, each regiment was required to take with it medical and surgical chests, litters and field supplies for three months. Afterwards, medical supplies in ample quantities of all kinds were sent to Tampa for the Fifth Army Corps, about to sail for Cuba, and supplies have subsequently been sent to the several camps that were formed, wants being anticipated as far as possible and requisitions approved promptly on receipt.

Supplies for the Army have been furnished from three medical supply depots: New York, St. Louis and San Francisco, the latter supplying very largely, by purchases on the Pacific Coast, the troops that went to Manila. St. Louis Depot supplied the camps and regiments in the Mississippi Valley and the West; and the New York Depot the camps and expeditions fitted out from the Atlantic Coast.

In addition to general medical supplies in great variety, 1204 medical and surgical chests have been issued, the surgical chests containing surgical instruments and dressings especially designed for the relief of wounded on the battlefield.

The extent of the demands upon the medical supply depots is indicated by the following figures, showing the issues of some of the more important articles:

First Aid Packets	no.	272,000
Hospital Corps Pouches	"	5,797
Orderly Pouches	"	509
Pocket Cases	"	962
Surgeon's Field Cases	no.	369
Field Operating Cases	"	328
Medical and Surgical chests	"	1,204
Litters	"	2,250
Litter Slings	"	7,600
Cots and bedsteads, with bedding	"	18,185
Blankets, gray	"	23,950
Field Desks	"	440
Quinine pills	"	7,500,000
Chloroform & Ether	botts.	13,220
Gauze, sublimated, 1 meter pkgs.	pkgs.	100,625
Gauze, bandages, 3 sizes	no.	331,776

Hospital Corps.

At the outbreak of the war the Hospital Corps consisted of one hundred hospital stewards, one hundred and three acting hospital stewards and five hundred and twenty privates making a total of seven hundred and twenty-three. The

larger part of this number was ordered with the troops that left their respective stations to the camps of concentration and accompanied the regular regiments in the 5th Army Corps to Cuba. The smaller part being left behind at the various Army Posts, they being just enough to take care of the medical property.

Enlistments were at once ordered throughout the country of suitable men for the Hospital Corps, special attention being paid to enlisting nurses, pharmacists, cooks, drivers, mechanics, etc. A good many medical students and young physicians were also accepted.

By means of enlistments and afterwards by transfers from volunteer regiments to the Hospital Corps a large number of men were obtained, and today there are in service by actual count five thousand and eighty-four. Probably a thousand are in service whose enlistment and transfer are not yet reported.

In addition to the members of the Hospital Corps enlisted for the purpose of taking care of our sick and wounded, we have employed 141 male nurses and 386 female nurses under contract.

Memorandum recommendation of Surgeon General, April 15, 1898, to the Adjutant General.

Each regiment to take 2 ambulances, 4 extra litters, a field hospital for 10 men, medical and surgical chests, field supplies for 3 months.

Infantry regiments to have a steward or acting steward and 10 privates of hospital corps.

Cavalry regiments to have 2 stewards or acting stewards and 15 hospital corps men.

A light battery to have one ambulance, field hospital for 5 men, (one hospital tent), an acting steward and five privates of the hospital corps

April 20, 1898, the Surgeon General sent instructions to Major B. F. Pope, chief surgeon, Tampa, Florida, directing him to inspect the medical department of each regiment upon its arrival, and report to him the deficiencies in medical supplies.

Consolidated list of more important articles sent to Tampa and Santiago.

First aid packets	No...	39,000
Alcohol	qt. bottles...	3,502
Bicarbonate of soda tablets	No...	237,200
Calomel and soda tablets	No...	40,000
Camphor and opium pills	No...	188,800
Castor oil	qt. bottles...	1,422
Chloroform	1-5 lb. bottles...	3,470
Compound cathartic pills	No...	259,200
Ether	1 5 lb. tins...	3,290
Fowler's solution	oz. bottles...	1,180
Morphine tablets	No...	17,300
Quinine pills	No...	4,678,000
Strychnine tablets	No...	50,000
Subnitrate of bismuth	lb. bottles...	657
Antiseptic tablets	No...	150 000
Carbolic acid	2 lb. bottles...	6,000
Iron, sulphate, commercial	20 lb. boxes...	500
Lime chloride	lb bottles...	4,456
Sulphur, in roll	lbs...	4,000
Formol gas generators, with supplies for same	No...	2
Beef extract	1-5 lb. tins...	5,790
Brandy	qt. bottles...	977
Condensed milk	tins...	3,546
Soap, castile	lbs...	974
Soups, (Franco-American) 24 cans in cases	cases...	981
Sugar, white	lbs...	2,868
Tea	lbs...	495
Whiskey	qt. bottles...	1,621
Stationary, a large supply to cover needs.		
Bandages, gauze, sterilized, 144 in box	gross...	839
Cotton, absorbent	lbs...	1,240
Gauze, sublimated	packages...	33,000
Gauge, iodoform	packages...	3,650
Ligatures, catgut, sterilized	packages...	18,600
Ligatures, silk, sterilized	packages...	18,600
Oakum	lbs...	1,260
Sponges, compressed cotton	boxes...	2,850
Thermometers, clinical	No...	211
Blankets, gray	No...	5,440
Chairs, arm, folding	No...	235
Chairs, small, folding	No...	2,350
Cots, folding	No...	4,250
Mattresses	No...	2,500
Mosquito bars	No...	3,570
Pillows, feather	No...	850
Pillows, hair or cotton	No...	4,250
Pillow cases, cotton	No...	7,700
Sheets, cotton	No...	10,000
Shirts, cotton	No...	4,750
Tables, mess, folding	No...	235
Tables, bedside, folding	No...	2,350
Litters	No...	630
Litter slings	No...	975
Table and kitchen furniture, for field hospitals for		3,000
Test tubes	No...	1,540
Medical sets, chests Nos. 1 and 2 of each	No...	29
Surgical sets, chests Nos. 1 and 2 sterilized chest and filter, of each	No...	21

NOTE:—The regular regiments had each a medical and surgical chest, litters, and other field supplies before the above articles were issued.

War Department,
Surgeon General's Office,
Washington, April 25, 1898.

Circular No. 1.

In time of war a great responsibility rests upon medical officers of the Army, for the result of a campaign may depend upon the sanitary measures adopted or neglected by commanding generals of armies in the field. The medical officer is responsible for proper recommendations relating to the protection of the health of troops in camp or in garrison, and it is believed that, as a rule, medical officers of the United States Army are well informed as to the necessary measures of prophylaxis and the serious results which infallibly follow a neglect of these measures, especially when unacclimated troops are called upon for service in a tropical or semi-tropical country during the sickly season. In Cuba our armies will have to contend not only with malarial fevers and the usual camp diseases—typhoid fever, diarrhea, and dysentery—but they will be more or less exposed in localities where yellow fever is endemic and under conditions extremely favorable for the development of an epidemic among unacclimated troops. In view of this danger, the attention of medical officers, and of all others responsible for the health of our troops in the field, is invited to the following recommendations:

When practicable, camps should be established on high and well drained ground not previously occupied.

Sinks should be dug before a camp is occupied, or as soon after as practicable. The surface of fecal matter should be covered with fresh earth or quicklime or ashes three times a day.

New sinks should be dug and old ones filled when contents of old ones are two feet from surface of ground.

Every man should be punished who fails to make use of the sinks.

All kitchen refuse should be promptly buried and perfect sanitary police maintained.

Troops should drink only boiled or filtered water and coffee or tea (hot or cold), except where spring water can be obtained which is pronounced to be wholesome by a medical officer.

Every case of fever should receive prompt attention. If albumin is found in the urine of a patient with fever it should be considered suspicious (of yellow fever) and he should be placed in an isolated tent The discharges of patients with fever should always be disinfected at once with a solution of carbolic acid (5 per cent.) or of chloride of lime (6 oz. to gallon of water), or with milk of lime, made from fresh quicklime.

Whenever a case of yellow fever occurs in camp the troops should be promptly moved to a fresh camping ground located a mile or more from infected camp.

No doubt typhoid fever, camp diarrhea, and probably yellow fever are frequently communicated to soldiers in camp through the agency of flies, which swarm about fecal matter and filth of all kinds deposited upon the ground or in shallow pits, and directly convey infectious material, attached to their feet or contained in their excreta, to the food which is exposed while being prepared at the company kitchens or while being served in the mess tent. It is for this reason that a strict sanitary police is so important. Also because the water supply may be contaminated in the same way, or by surface drainage.

If it can be avoided, marches should not be made in the hottest part of the day—from 10 a. m. to 5 p. m.

When called upon for duty at night or early in the morning, a cup of hot coffee should be taken.

It is unsafe to eat heartily or drink freely when greatly fatigued or overheated.

Ripe fruit may be eaten in moderation, but green or over-ripe fruit will give rise to bowel complaints. Food should be thoroughly cooked and free from fermentation or putrefactive changes.

In decidedly malarious localities from 3 to 5 grains of quinine may be taken in the early morning as a prophylactic, but the taking of quinine as a routine practice should only be recommended under exceptional circumstances.

Light woolen underclothing should be worn, and when a soldier's clothing or bedding becomes damp from exposure to rain or heavy dews the first opportunity should be taken to dry it in the sun or by fires.

GEO. M. STERNBERG,
Surgeon General, U. S. Army.

[NOTE.—Circular No. 3 is the last of the series of 1897.]

WAR DEPARTMENT,
SURGEON GENERAL'S OFFICE,
Washington, August 8, 1898.

Circular No. 5.

The attention of medical officers is invited to circular No. 1 from this office dated Washington, April 25, 1898.

The extensive prevalence of typhoid fever in camps of instruction indicates that the sanitary recommendations made in this circular have not been carried out. If medical officers have failed to make the proper recommendations as indicated, the responsibility rests with them. If the recommendations have been made and not acted upon by those having authority in the various camps, the responsibility is not with the medical department, but these recommendations should be repeated and commanding officers urged to move their camps at frequent intervals and to maintain a strict sanitary police.

GEO. M. STERNBERG,
Surgeon General, U. S. Army.

WAR DEPARTMENT,
SURGEON GENERAL'S OFFICE,
Washington, August 12, 1898.

Circular No. 6.

Chief surgeons of Army corps, of divisions and of smaller independent commands are expected to make timely requisition for medical supplies. It must be remembered that some delay is often unavoidable in putting up supplies at the supply depots and in their transportation to the point at which they are needed. In an unexpected emergency telegraphic requisition must be made and supplies will be sent by express; but it must be remembered that this mode of transportation is very expensive and that failure to make requisition in advance of immediate needs entails unnecessary expense upon the Government. Division and field hospitals in which typhoid fever and other serious cases are treated should be liberally supplied with all articles necessary for the treatment and comfort of the sick. The field supply table applies only to mobile commands and division hospitals to accompany them on short notice.

GEO. M. STERNBERG,
Surgeon General, U. S. Army.

THE MILITARY SURGEON

A SUPPLEMENT TO THE

NATIONAL MEDICAL REVIEW

UNDER THE CHARGE OF

COLONEL WILLIAM H. FORWOOD,

Assistant Surgeon-General, United States Army.

VOL. I. WASHINGTON, D. C., OCTOBER, 1898. NO. 8.

Original Articles.

SERO-THERAPY AND ITS SCOPE IN MILITARY MEDICINE.

BY A. L. MANN, M. D., Elgin, Ill.

Late Maj. and Surg. 3rd Infantry, I. N. G.

A careful consideration of the subject of Sero-therapeutics as evolved to date, cannot fail to most profoundly impress an intelligent and impartial observer with the fact that a therapeutic and remedial innovation has obtained a position in the annals of medicine, which by its subsequent eloboration, now reasonably assured, is destined to revolutionize to a great degree the heretofore accepted doctrines and principles of Materia Medica as applied to the prevention and cure of disease in the human family.

Beginning with the period of superstition and sorcery, the resources of primitive man with which to exorcise the Devil of Disease—which Devil, it may be proper to remark, has an existence in fact as we know today, but possessing a distinctive individuality in the character of pathognomonic Micro-organisms, as against the phantasms conjured by the vivid imaginations of our progenitors—passing down the vista of generations and centuries, we finally merge into an era of dependence upon the organic and inorganic products of Mother Earth as the most essential adjuncts to the restoration and maintenance of the physical equilibrium, which condition obtains and predominates in an elaborate form at the present day, as witness the vast list of crude drugs and their manifold and diverse chemical and pharmaceutical preparations and combinations, each and every one of which has an accredited physiological effect and a consequent greater or lesser therapeutical value.

Is it presumption to prophesy the overthrow of this supremacy and to look for reorganization under another and radically different standard, which will enable us as guardians of the public health to prognosticate therapeutical results positively, instead of problematically, as heretofore.

The status of serum therapy from its inception by Pasteur over twenty years ago, and its subsequent development by Emmerich, Roux, Kitasato, Behring and a host of eminent collaborateurs, to its present elaboration, imperfect though it may be as compared with possibilities

and our sanguine expectations, is yet such as to warrant us in entertaining such prophetical hopes and to stimulate us to continuous and unrelenting effort to perfect the development of this Medical El Dorado.

Serum therapy implies:

First. The unqualified acceptance of the theory of the bacterial origin, cause and differentiation of disease.

Second. A recognition of the inherent individual powers of resistance on the part of the normal blood serum, to the encroachment of disease.

Third. The extent to which that recognized factor can be reinforced by scientific artificial means.

Fourth. The products of scientific research and investigation at our command today, for the purpose of thus reinforcing nature's powers of resistance.

Fifth. Therapeutical results to date.

That typical diseases are now positively identified only by the presence of specific and definite forms of bacteria, is not denied nor disputed by thinking pathologists of any school of today. In how far these specific micro-organisms may be primarily pathogenetic, or whether they themselves are a product of some initial lesion or physical disturbance, is still a question to be determined with absolute certainty by the bacteriologist and biological investigator of the future.

But whatever may be the doubts as to the initial source or origin of these pathognomonic organisms, there is no doubt that the introduction of any one of the well known separate and distinct types of bacteria into the system, either by accident or design, and the propagation of the same therein, will produce actual typical lesions, characteristic of each, and which can be communicated and distributed through the medium of individual contact, under proper conditions, ad infinitum.

Now, given the conditions due to the presence of pathognomonic bacteria, our energies are supposed to be bent toward resisting any further encroachment and eliminating the existing disturbing element from the system.

The first essential point in such an aggressive campaign is a consideration of the forces immediately at our command with which to combat the pending or existing conditions.

These may be said to be two in number—inherent and acquired, the inherent and predominating one being what we know as the normal power of resistance, and which of necessity varies greatly as to degree in different individuals and under different conditions; while the acquired force depends upon various extraneous synthetical or natural products, the result of careful scientific research and experiment, the therapeutical application of which is not always understood.

While the normal power of resistance as a factor in maintaining and restoring the physical equilibrium has long been recognized under the vague term of "vis medicatrix naturæ," it remained for the students and investigators of the present generation to define and locate the individuality of this agent as being a constituent of the blood serum, generally acknowledged to be an albuminoid substance and designated by different investigators as the "Alexine" of Buchner, "Immuntoxin-proteine" of Emmerich, and "Nuclein" of McClintock. How far the so-called nerve forces of the body may be an adjunct to this property of the blood serum or to what extent the nerve force itself may be dependent upon the blood serum will not be discussed in this paper.

The theory of phagocytosis, as advanced by Metschnikoff, in the light of subsequent developments, can scarcely be considered as a dominating factor in the initial antagonism to bacterial invasion, but rather as a secondary phase, in asmuch as the leucocytes, while inimical to all forms of bacteria, do not offer sufficient resistance to be depended upon as a factor in the safety of the individual under pending adverse conditions, excepting under conditions of marked hyperleucocytosis.

Assuming then that some constituent of the blood serum at present definitely unknown, renders it as a medium unfavorable for the culture and propagation of disease germs, until by successive attacks, the supply of the resisting power be exhausted, we have, in view of such possible adverse conditions, to look for other means with which to repel the threatened invasion.

The ideal type of aid in an emergency of this kind, would consist in the introduction into the blood of an additional supply of this serum from either artificial or natural sources, containing the proper proportion of this unknown, disease resisting, germ destroying element. We do know this, however, that each individual type of bacterium, when confined, evolves a substance, which, inhibitory and destructive, at least retards their further propagation or growth and eventually results in the destruction of individual colonies.

This product, freed from debris, has been shown to possess the peculiar property of rendering the normal blood serum, by a process of gradual adaptation, absolutely uninhabitable to that particular type of bacteria from which the product was obtained. An elaboration of this fact on the part of experimentors and investigators has resulted in the development of serum products of use for therapeutical purposes and known as toxines and antitoxines. The one being the primary products of bacterial decomposition, and the other the results of some unexplainable action of the toxine upon the normal blood serum, investing it with the peculiar property of destroying the parent bacteria wherever found and of immunizing the individual against encroachment by the same type of bacteria.

The development of this product is still in the experimental stage, but it has been demonstrated beyond doubt that in one or two or three instances at least, this product of serum, or antitoxine, is so universally efficacious as to constitute a practical specific remedial and preventative agent for and against attacks by the individual bacteria.

Serums have been prepared and used with varying success in the following bacterial disturbances of the physical equilibrium, clinically known as diphtheria, smallpox, tetanus, tuberculosis, streptococcic infections, typhoid fever, bubonic plague, rabies, cholera, yellow fever, pneumonia, anthrax, syphilis, snake poisoning, abrin and ricin poisoning, typhus fever and cancer.

The diphtheria antitoxine has been subjected to a most crucial clinical test for the past three years and with the most gratifying results. A most exhaustive statistical report, including statistics from hospital and private practice from all parts of the civilized world, shows that the mortality in this dread disease has been reduced from an average of fifty-five per cent. to between ten and fifteen per cent. of all cases, and the mortality in operative cases has been reduced from 70 per cent. to between 20 per cent. and 30 per cent. In about 13,000 cases, where the serum treatment as a prophylactic

measure was resorted to, only sixty-five cases are known to have subsequently contracted the disease. The serum treatment of diphtheria is, in consequence thereof, acknowledged and accepted by the medical world at large as more nearly a specific than any other known method, and is a safe criterion of what may be expected in similar treatment of other lesions of kindred character, although the recorded results in other diseases have not been as satisfactory as could be desired.

In tetanus, the percentage of deaths in cases subjected to serum treatment has been about 40 per cent. But these statistics are rendered uncertain and unreliable by reason of the diverse conditions attending the administration of the antitetanic serum, which must be administered as far in advance of dangerous symptoms as possible. In this disease it is safe, and doubtless justifiable, to anticipate serious conditions in every instance and use the treatment as a prophylactic, rather than as a curative measure.

In pneumonia, treated by antitoxine, the statistical reports are unsatisfactory. It appears to be of some value, but extensive and exhaustive statistical statements are not available and the treatment has not been used to any great extent, owing to the fact of extreme difficulty in preparing the serum.

In rabies, the serum treatment is not a satisfactory success, inasmuch as clinical application of laboratory facts has not given the results hoped for.

The use of Behring's cholera antitoxine is said to be successful, although statistical results have not yet been published.

Numerous cases of streptococcic infection have been recently published by different writers as having been successfully treated with anti-streptococcic serum. Tabulated statistics, however, are not available. But it is safe to presume that we have here a field fully as wide as the diphtheritic field for experiment and out of which we should get good results.

The serum treatment of yellow fever is at present in its experimental stage. No positive statistics have as yet been published and by reason of the uncertainty of the actual etiological factor in the production of the disease, we must await subsequent developments before arriving at positive conclusions.

The serum treatment of snake poisoning has been reasonably successful and it is safe to presume that the serpent's tooth will have lost its venom, if we can reach the victim soon enough.

In abrin and ricin (vegetable poisoning), results have been reasonably satisfactory.

The treatment of cancer by the injection of antitoxic serum and the toxines of erysipelas, streptococci and B. prodigiosus has not been satisfactory and the concensus of opinion is, at the present date, that either the method is wrong or the proper serum has not yet been found.

The treatment of tuberculosis has been a clinical failure up to date, as a curative measure, although the injection of various forms of tuberculine are acknowledged to be valuable diagnostic factors. De Schweinitz of Washington, D. C., in a recent article, describes a new anti tuberculosis serum perfected under his own supervision, and subjected to limited clinical experiment, with apparently satisfactory results. However, in view of the many failures of other experimentors in this line, it will necessitate a most exhaustive clinical trial with anti tuberculosis serum to be convincing.

Reverting now to the essential feature

of serotherapeutics as pertaining to this paper, viz., "its scope in military medicine," a statement to the effect that "the most important factors in military and naval surgery of today are asepsis and antisepsis," (Int. Jour. Surgery, May, 1898, page 142) having been noted, it is respectfully submitted that that statement can be advantageously amended by the addition of the words "prophylaxis" and "immunization." As is well known, the chief terrors of the battle-field hospital are the dreaded forms of toxæmia manifested either as septicæmia, tetanus, erysipelas or gangrene, which by reason of the unavoidable conditions under which the primary injury is received cannot be wholly guarded against by the most intelligent and strenuously applied system of asepsis or antisepsis. It is consequently rational and justifiable to consider the application of the principle of primary immunization and arrest of pathogenesis, either by reinforcing a natural or active individual immunity or furnishing the necessary degree of acquired or passive immunity by the timely use of the various serums in so far as they may be available.

The efficacy of immunization from small-pox by vaccination, is so thoroughly recognized as to make revaccination of entire commands, at stated intervals, (Adair. Nat. Med. Rev. May, 1898, page 443) not only advisable but imperative. The almost absolute prophylaxis of immunizing doses of diphtheria antitoxin for and against that scourge, as demonstrated from exhaustive reports from all sources, is now conceded, and what is true of these two bacterio-pathologic conditions, must be and eventually will be true of all other bacterio-toxic manifestations, more especially those of pyogenic strepto or staphylococcic origin. It is true that the difficulties and expense attending the present methods of production of these remedies, as also the necessary attention to a certain technique in their administration, may and for the present will operate against the use of bactericidal and anti-toxic serums as extensively as the field permits and demands in the military service, particularly in time of war when every administrative function is taxed to its utmost and something beyond; but those conditions can by no means be considered as a justifiable excuse for a failure to consider and appropriate by the Medical Department the results and products of this comparatively new field of research, in so far as the accrued product to date will permit, and military conditions as they may be found will allow.

Attention is called to the "Nuclein" of McClintock, previously mentioned, which is now being prepared in marketable quantities by Parke, Davis & Co., and which certainly deserves the most careful consideration of the physician and surgeon as an antagonist to all conditions due to or aggravated by the presence of pathogenic bacilli or their toxines. The writer's experience with it has been limited but as surprisingly satisfactory as was his earlier experience with diphtheria antitoxines, and it can safely be said that it is one of the seroproducts destined to obtain a permanent recognition.

MEMORANDA RELATING TO OPERATIONS OF THE MEDICAL DEPARTMENT, U. S. ARMY.

Extracts From a Report by 1st Lieutenant Guy C. M. Godfrey, Assistant Surgeon, U. S. Army.

SANTIAGO DE CUBA,
July 28, 1898.

To the Surgeon-General, U. S. Army,
Washington, D. C.
(Through proper channels.)

SIR:—As commanding officer of the Hospital Corps Company of the First

Division, 5th Army Corps, I have the honor to submit the following report:

This Company was organized at Tampa, Florida, on June 5th, 1898, just two days previous to the departure of the troops of the First Division for the transports at Port Tampa, Fla. On the day of organization the strength of the Company was eighteen (18) privates. No non-commissioned officer was assigned to it until June 7th, 1898, when Acting Hospital Steward McGuire reported for duty. He was at once detailed as First Sergeant of the Company, which place he has held up to the present date. A cook and an assistant cook, orderlies for the Medical Officers and a clerk were at once detailed.

* * * *

When the order came to move, the men of the Company performed the work necessary thereto, and the enthusiasm and *esprit du corps* with which they labored added greatly to the celerity and facility with which the task was accomplished. The personnel and supplies of the Division Hospital, as well as the Hospital Company was placed on board the Transport "Santiago," and arrived off the coast of Cuba near Santiago on June 20th, 1898. The day before landing all of the material was brought up from the hold by the men of the Company, and stored on the main deck of the ship near the forward starboard port. This was done by direction of Major M. W. Wood, Chief Surgeon of this Division, and proved a wise and efficient measure.

We landed on June 25th at Siboney, Cuba, and pitched camp on the beach. On this day 13 of the privates of the Hospital Corps of the 71st N. Y. Vols. joined the Company. During the night of June 25th, Acting Hospital Steward McGuire and five of the men worked all night unloading the material for the hospital, and storing it upon the beach under canvas. This was done by using small boats drawn by steam launches, and, owing to the high swell, it was at times quite dangerous. I remember several occasions where the men narrowly missed injury from falling boxes.

On June 26th the men were given a short drill to perfect organization. Hurried preparations were made for a forward movement, and as absolutely no transportation could be obtained from the Quartermaster's Department, these preparations consisted principally in selecting such necessary dressings and drugs as the men could carry on their backs and litters. On June 27th the First Division moved forward, and the Hospital Company followed in rear of the Third Brigade, taking the ridge road towards Seville. Owing to the possibility of an immediate skirmish or battle, none of the Medical Officers rode their horses, but made pack-mules of them, and carried as large a number of dressings, etc., as they could. The Division camped in column of Brigades, and the Hospital Company and Division Hospital pitched camp near the Headquarters of the Division Commander. On the following morning twenty men and the Steward and two Medical Officers returned to Siboney, and brought up four litters, and as many medical supplies as possible, returning about 2 o'clock p. m.; after a soaking rain the Company broke camp, and was ordered to move forward two miles. This they did marching over a rocky, yet muddy road, carrying the Hospital supplies with them. They pitched their shelter tents on the soaking ground, while the officers, who had no shelter, slept in the open air exposed to dampness and poisoning. On June 29th the Company moved forward a quarter of a mile further to a beautiful spot with the Aquadores River on one side, and the Siboney road on the other. Here on the 29th the Division Hospital was established, and here it remained all through the terrible carnage that followed. On this day six wagon loads of our supplies were brought up from the beach at Siboney, and tent-flies were pitched and everything arranged for the coming battle. On the 30th of June the work of establishing the Division Hospital continued and more of our supplies were brought from Siboney.

* * * *

On the morning of July 1st, the writer rode in the direction of the firing

towards El Caney, and while searching for an ambulance rode to the extreme right and visited the firing line of the 12th Infantry. He then returned and reported to Major Wood, who directed an ambulance to be at once sent in that direction. Owing to the very small number of Hospital Corps men present with the Division, and as the number of ambulances for the entire army was limited to three, it was impossible to expect them to convey the total number of wounded from the collecting stations to the First Division Hospital. It was soon apparent that the entire force of Hospital Corps would have to be used to man the hospital, but about noon Acting Hospital Steward McGuire, two litter squads and an ambulance went forward up the San Juan road. As the Spanish shrapnel were bursting around the battery on El Paso hill, near the road, it was not deemed prudent to take the ambulance beyond that point. Therefore it remained, while the two litter squads pushed forward up the San Juan road. One wounded man was found, who was not able to walk, about 400 yards before reaching the furthest crossing of the Aquadores River. He was at once dressed and conveyed to the rear by a litter squad. The other litter and the Steward advanced adout 400 yards further to the east bank of the Aquadores, and there found a wounded man who could not walk. At this time the 6th and the 16th Infantry were immediately in front, and were making their advance towards San Juan Hill. It can therefore be seen that the hospital litter squad in rear was under the hottest kind of fire, and the bullets were cutting the leaves all around, but not one of these men faltered, or showed the least sign of fear.

* * * * *

At this time the wounded were coming back in a constant stream, and such as needed stimulation or dressing were at once attended to by the roadside. Many of them returned alone, others walked supported by the arm of some comrade, while the more seriously wounded were borne upon litters of various kinds. A few of those who returned had not received medical attention, but the majority of them were dressed with first-aid packages by the regimental surgeons, and their hospital corps men.

At about 1 p. m. Major Valery Havard, Chief Surgeon of the Cavalry Division established an ambulance station on the east bank of the Aquadores near El Paso. At this station many dressings were readjusted, and a few patients were dressed for the first time. Stimulants, medicines and dressings constituted the stock at this station, which was about a mile in advance of the First Division Hospital. No point further to the front was safe from the enemy's fire. The ambulance were worked constantly, and, considering their number did remarkably well. Late in the afternoon ambulances were taken forward to near the furthest crossing of the Aquadores, but it was rather dangerous at all times as the enemy kept the San Juan road enfiladed all day long. It was also very dangerous on account of Spanish Guerrillas who were located in trees overlooking the road. Several men carrying wounded were shot, and, indeed, in a few cases the patients themselves were hit.

Later in the afternoon a dressing station was established at the furthest point where the San Juan road crossed the Aquadores. At this place there was a vertical bank about four feet high, beneath which was a gravel beach. Here a certain amount of shelter was obtained, but bullets frequently cut through the bushes, or splashed up the water in the creek. At one time it was enfiladed by Spanish sharp-shooters in trees up the creek. Several horses were killed here, but no patients, surgeons or attendants were injured that afternoon. It was at this place on the following morning that Dr. Danforth was killed. Late in the afternoon several escort wagons, having carried ammunition to the front, were turned over to the writer by Lieut. J. D. Miley, General Shafter's Aide-de-Camp. These were taken to this station and filled with the wounded who were transported to the first division hospital. Empty army wagons that could be found

were used for this purpose, and the wounded kept coming into the hospital all night. On the following morning an ambulance and two wagons were taken to the dressing station just described, and the wounded brought in—among them being A. A. Danforth, surgeon, who was shot through the head. Major S. Q. Robinson had assumed command of this station on the previous afternoon, but at this time he, with Capt. W. D. McCaw, rejoined their regiments, and left the station in charge of Capt. Paul Newgarden. Major V. Havard arrived later, and established an ambulance station at this point, which was then comparatively safe. It was customary during the battle for the writer to send litters and dressings to the front in the empty ambulances. During and after the battle, the men of the hospital corps company did much of the work in the first division hospital. They assisted in operations, helped in applying dressings, made soup and coffee, carried patients to and from the operating tables, and acted as nurses to the wounded. With but few exceptions they worked all day, all night, all the following day, and most of the next night. They were assisted by members of the bands of the regiments, and by some of the hospital corps men of the regiments.

During the battle the first aid work was very effective, and was done mostly by regimental surgeons and their hospital squads. Many dressings were applied by the line officers, and soldiers on the firing line, and in some instances by the wounded men themselves Major S. Q. Robinson who commanded the Aquadores dressing station on July 1st says that only about ten patients came there who had not been dressed by first aid packets. Words can hardly express the appreciation which the officers and men of the line have for the first aid packets. They realize now, as never before, the value and importance of instruction in first aid work. The very small number of suppurating wounds can readily be accounted for by the prompt applications of these dressings.

* * * *

The Surgeon-General of the Army and the American National Red Cross.

Owing to the pressure of my official duties I have not heretofore felt justified in taking the time to make an explanation with reference to my attitude towards the American National Red Cross.

It has been repeatedly charged in the newspapers that I am hostile to this organization and have refused to accept its assistance in the care of our sick and wounded soldiers and that as a result of this refusal there has been unnecessary suffering.

These charges are without foundation, except in so far as I have objected to the sending of female nurses with troops in the field engaged in active operations. We have a Red Cross Hospital Corps in the Army, of enlisted men whose duty it is to render first aid to the wounded upon the field of battle and to care for the sick in our division field hospitals, and I have been of the opinion that female nurses would be an incumbrance to troops during active operations; but so soon as serious sickness developed in our camps and it became necessary to treat typhoid fever cases in our field hospitals, I gladly accepted the services of trained female nurses for the division field hospitals, and in our general hospitals we have employed them from the first. The general testimony from the surgeons in charge of these hospitals has been that their services have been of great value. Very many of these trained nurses have been obtained through the kind assistance of the Red Cross Society for Maintenance of Trained Nurses, Auxiliary No. 3, and I desire to express my high appreciation of the valuable services rendered to the Medical Department of the Army by this organization.

My attitude towards relief organizations is shown by an endorsement dated May 5th upon a letter addressed by Rev. Henry C. McCook of Philadelphia, to the President and referred to me for remark:

May 5th, 1898. Respectfully returned to the Adjutant General of the Army.

The plan proposed for the organization of a relief association appears to have

been well considered and the object in view will commend itself to every patriotic citizen. But it is a question whether the President should give special privileges to any particular organization. Other prominent individuals in different parts of the country may be organizing for the same purpose. One such proposition has come to me from Chicago. While I approve in a general way of organization for the relief work proposed, it appears to me that it will be best not to give in advance, exclusive privileges to any one particular organization. In case of need assistance should be accepted from any organization prepared to give it.

This has been my guiding principle throughout, that relief when needed should be promptly accepted without reference to the source from which it comes. The relief afforded by the National Red Cross at Siboney was promptly accepted by the surgeons on the spot, but it is evident that it was entirely inadequate to meet the emergency.

A committee of the American National Red Cross Association called upon me in my office in Washington some time in advance of the landing of our troops in Santiago, making an offer of assistance. I received them most courteously and advised them to use their resources in fitting up a hospital ship, telling them that a hospital ship was now being fitted up for the use of the medical department, but that it was not at all improbable that an emergency would arise which would overtax our resources, and that in such an event a hospital ship properly equipped, having on board a corps of doctors and nurses would be a most valuable auxiliary.

Furthermore, the American National Red Cross Association has had full authority to send agents and supplies to all our camps since June 9, 1898, and if there has been suffering for want of needed supplies they must share the responsibility with the Medical Department of the Army for such suffering.

The following letter was sent by me to every Chief Surgeon of a Department or independent Army in the field on June 9, 1898 :

"The Secretary of War has approved of the following proposition made by the American National Red Cross Association, and the Chief Surgeons of Army Corps and Divisions will co-operate with the authorized agents of this Association for the purposes indicated.

"We can put any desired amount of hospital supplies—ice, malted milk, condensed milk, Mellin's Food, etc.,—into any of the volunteer camps in a few hours. Will you be kind enough to bring this letter to the attention of Secretary Alger and ask him if there is any objection to our appointing a Red Cross representative to report to the commanding officer and the chief surgeons in every camp, confer with them as to their immediate needs, and, if anything of any kind is wanting, open there a Red Cross Station and send in the supplies. We can do this, not in a few weeks or a few days, but in a few hours, and can furnish any quantity of any desired luxury or delicacy for hospital use. We hereby tender our aid and put our organization at the War Department's service for co-operation in this field."

To show my cordial relations with the National Red Cross Relief Committee I venture to quote from a letter of August 11th, received by me from Mr. Cleveland H. Dodge, Chairman of the Supply Committee. Mr. Dodge says:

"I want again to assure you personally, and on behalf of our Committee, of our earnest desire to assist you in every possible way and to thank you for calling upon us so frankly."

In a recent letter from Mrs. Winthrop Cowdin, Vice-President of the Red Cross Society for Maintenance of Trained Nurses, she says :

"We greatly appreciate your courtesy to us and feel most grateful to have been permitted to serve you in any way."

GEO. M. STERNBERG,
Surgeon-General, U. S. Army.

Examination for the Marine Hospital Service.

TREASURY DEPARTMENT,
OFFICE SUPERVISING SURG.-GENERAL,
MARINE-HOSPITAL SERVICE,
Washington, D. C., August 25, 1898.

A board of officers will be convened at Washington, Wednesday, November 9, 1898, for the purpose of examining candidates for admission to the grade of Assistant Surgeon in the U. S. Marine Hospital Service. It is desired that applications for this examination be made before November 1st.

Candidates must be between twenty-one and thirty years of age, graduates of a respectable medical college, and must furnish testimonials from responsible persons as to character.

The following is the usual order of the examination: 1. Physical. 2. Written. 3. Oral. 4. Clinical.

In addition to the physical examination candidates are required to certify that they believe themselves free from any ailment which would disqualify for service in any climate.

The examinations are chiefly in writing, and begin with a short autobiography by the candidate. The remainder of the written exercise consists in examination on the various branches of medicine, surgery and hygiene.

The oral examination includes subjects of preliminary education, history, literature and natural sciences.

The clinical examination is conducted at a hospital, and when practicable candidates are required to perform surgical operations on the cadaver.

Successful candidates will be numbered according to their attainments on examination, and will be commissioned in the same order as vacancies occur.

Upon appointment the young officers are as a rule first assigned to duty at one of the large marine hospitals, as at Boston, New York, New Orleans, Chicago, or San Francisco.

After five years service Assistant Surgeons are entitled to examinations for promotions to the grade of Passed Assistant Surgeon.

Promotion to the grade of Surgeon is made according to seniority, and after due examination as vacancies occur in that grade. Assistant Surgeons receive $1,600, Passed Assistant Surgeons $2,000, and Surgeons $2,500 per year. When quarters are not provided commutation at the rate of $30, $40, or $50 a month, according to grade, is allowed.

All grades above that of Assistant Surgeon receive longevity pay, ten per centum in addition to the regular salary for every five years service up to forty per centum after twenty years service.

The tenure of office is permanent. Officers traveling under orders are allowed actual expenses. For further information or for invitation to appear before the Board of Examiners, address,

SUPERVISING SURGEON-GENERAL,
U. S. Marine Hospital Service.

An Army Medical Board will be in session at Washington City, D. C, during October for the examination of candidates for appointment to the Medical Corps of the United States Army, to fill existing vacancies. Persons desiring to present themselves for examination by the Board will make application to the Secretary of War, before October 1, 1898, for the necessary invitation, giving the date and place of birth, the place and State of permanent residence, the fact of American citzienship, the name of the medical college from which they were graduated, and a record of service in hospital, if any, from the authorities thereof. The application should be accompanied by certificates based on personal acquaintance, from at least two reputable persons, as to his citizenship, character, and habits. The candidate must be between twenty-two and twenty-nine years of age, and a graduate from a regular medical college, as evidence of which his diploma must be submitted to the Board. Successful candidates at the coming examination will be given a course of instruction at the next session of the Army Medical School. Further information regarding the examinations may be obtained by addressing the Surgeon-General, U. S. Army, Washington, D. C., Dr. George M. Sternberg.

Selections.

The Morbidity of the United States Forces for the First Calendar Month in the Field at Tampa, Fla.—Raymond.

The mean strength upon which the following statistics are based include 477 officers, 7,978 enlisted men (white), and 1,666 enlisted men (colored), or a total of 10,121. The number of days lost to the Government from sickness was 5,120, or proportionally about one-half a day for each individual soldier included in the mean strength of the command. There were ten cases of discharge on surgeon's certificate of disability, or one-tenth of one per cent. Out of a numerical strength of 10,121 there were 1,294 admissions to sick report during the month, or about one-eighth of the entire force presented itself before the medical officer with diseases sufficiently serious to disable for active duty for a longer or shorter period, averaging for the month, as above stated, the loss of about one-half a day to the Government for each individual included in the mean strength of the command, or about four days for each man admitted to sick report. Among the cases admitted, seventy-four were simple vaccinia, or temporary induration with tenderness at the site of vaccination. The most frequent cause for admission, however, was diarrhea, there being 556 cases of this complaint out of the 1,427 cases of disease accounted for in the consolidated report for the month, covering 133 cases remaining from the previous month, and 1,294 cases admitted during the current month. Whatever may have been the causes of these diarrheas, and they have been variously attributed to heat, to marked diurnal variations of temperature, to indiscretions of diet or cold drinks when the soldier was overheated, to sleeping upon the ground, etc., it was noted by me that as soon as the men were placed upon the transports these catarrhal conditions of the intestinal canal tended rapidly to disappear, and the opposite condition—one of relative constipation—set in. The consolidated report shows but six cases of alcoholism during the month. Under my personal observation in Tampa and vicinity during the past six weeks there have come but two or three cases of drunkenness, and no case of beastly intoxication. Beer has been consumed, but only in moderation, and the soldiers have largely resorted to non-alcoholic drinks. There have been 36 cases of heat exhaustion, all of them mild, and there have been 80 cases of wounds (not gunshot), usually slight, and 77 cases of contusions and sprains, also slight or insignificant, as a rule, together with 30 cases of abscess or localized pus formations, such as otorrhea, whitlows, and the like, and also 27 boils, occurring chiefly in cavalrymen. But 7 cases of typhoid fever are recorded, although among the 33 cases classified as "not diagnosticated," there were doubtless a number of typhoid cases transferred to Divisional Hospitals before the diagnosis had been established. The 1,427 cases of disease and injury in the consolidated report are classified under fifty-four headings. Those most frequently encountered, and in the order of their frequency, appear in the following list: Diarrhea, 556 cases; wounds (not gunshot), 80 cases; contusions and sprains, 77 cases; vaccinia, 74 cases; malarial intermittents, 54 cases; rheumatism, muscular, 48 cases; heat exhaustion, 36 cases; gonorrhea, 34 cases; simple abscess, 30 cases; dyspepsia, acute, 27 cases; boils, 27 cases; skin affections, 25 cases; bronchitis, acute, 25 cases; intestinal colic, 24 cases; chancroids 19 cases; hemorrhoids, 18 cases; measles, 11 cases; syphilis, 10 cases; gunshot wounds, 5 cases; appendicitis, catarrhal, acute, 1 case. The daily average sick of the command was only two-tenths of one per cent. No death was reported. These statistics refer only to regular troops, but one report of sick and wounded having been received from volunteer regimental surgeons up to the date of consolidation. Raymond (H. I.) Capt. and Asst. Surgeon, U. S. A. Medical News, 1898, lxxiii, 44.

X-Rays in Military Surgery.

Professor Küttner, of Tübingen, who followed the last Greek war in connection with the German Red Cross Society, has made some interesting experiments with the Roentgen rays at the Constantinople Hospital. In his report just issued he says, that while the apparatus proved of service when applied with the screen it was rarely possible to take a satisfactory photograph, on account of the difficulty of bringing the patients into the proper position. The former method proved often the only way to ascertain the site of a projectile which had entered the body and remained there. This was applicable to all parts of the body except the stomach and head. A bullet in the brain, for instance, showed very indistinctly. (Last spring an arrangement of mirrors exhibited at a soirée of the Royal Institution, where a photograph of the brain showed in relief, enabled the operator not only to see the foreign body, but also to measure correctly the distance from the outer wall of the cranium.) Professor Küttner says it is noteworthy that splinters of bullets and of bone which had penetrated into the soft parts of the body could not be distinguished from each other. Also, he says, it was proved that the opinion that deep-lying masses of pus could be located was erroneous. Injuries to the central nervous system, the spinal cord, and the peripheral nerves were solely ascertained by the aid of the Roentgen rays. It was impossible to do this before. Furthermore, it could be seen whether a bone was wholly or only partially severed—a matter of great importance as far as therapeutics is concerned. For shot wounds in the extremities he recommends that a photograph be taken. His conclusion is that the Roentgen rays are of great importance for medical aid in war, but only for fixed hospitals, such as reserve hospitals and those installed in fortresses, while for moving field hospitals their application is very limited. (The Lancet.) Med. Rec., N. Y. 1898, liv, 376.

Swelled Foot in Soldiers.

A recent number of the Deutsche Medicinische Wochenschrift reviews three articles that have appeared within the last year on that indefinite condition swelled foot or edema of the feet, that so often occurs in people, like soldiers, who are much on their feet and have in addition suffered from slight accidents. The articles are all from military medical men who have made special studies of the subject and of late have called the Röntgen-rays to their aid in the matter. All three of these surgeons have found that these foot conditions which are apt to be set down simply as sprains are really due to fractures of the metatarsal bones. In certain cases the line of fracture can be distinctly seen in the Röntgen photographs, though in many it cannot. In some even after the healing the callus is visible in the same way. Kirchner reports fifty-five cases of the condition in all of which some characteristic symptoms of fracture could be demonstrated when it was carefully looked for. He considers that in all of these cases in which, after slight injury, a turn on the foot, a misstep, sometimes the failure to notice a step, or the like, edema of the foot develops, with tenderness when the foot is used, the underlying pathological condition is a metatarsal fracture. The treatment is, of course, rest and then firm support that practically immobilizes the metatarsal joints afterward. He warns especially against meddlesome massage and attempts to reduce the swelling in the early stages and overcome the stiffness that is Nature's protective mechanism, during the process of the cure, by manipulations of the foot. Such misdirected efforts lead to the development of the chronic soreness so often seen as a sequel in these cases, and which may persist as a torture to the patient for the remainder of life. Medical News, N. Y., 1898, lxxiii, 250.

Blistered Feet in Soldiers.

According to Vitaliani (cited in the Presse médicale and in the Nouveau Montpellier médical for August 7th),

the painful blisters of the feet that are apt to result from the use of defective shoes may speedily be so palliated as to enable the soldier to resume his march with comfort. An incision is made with a bistoury through the raised epidermis from one side of the blister to the other. Each flap in turn is gently raised with a forceps, and the surface beneath is dusted with iodoform. The flaps are allowed to resume their place, a little absorbent cotton is applied, and this is held in place with adhesive plaster. N. Y. Med. J., 1898, lxviii, 311.

British Medical Arrangements for the Soudan.

The following details concerning the medical arrangements of the British army in the Soudan, from the Lancet's special correspondent, dating from Fort Atbara, August 5th, and published in its issue for August 27th, may be of interest. The writer says :

"Surgeon-General Taylor arrived a few days ago from England, and the disposition of the various medical units was arranged. There are to be twelve field hospitals under the charge of majors of the Royal Army Medical Corps, a one hundred bedded hospital at the Atbara, and a three hundred bedded one at Abadia. The hospitals on the lines of communication will be established on the various steamers which will run between the front and the base hospitals and a medical officer will be on board the new gunboats which will play an important part in the bombardment of Omdurman. The cavalry and the Royal Artillery have each a field hospital allotted to them, and this time there will be no want of medical officers or material. The Royal Engineers have been hard at work on the sun covers for the stretchers, and a very good shaded stretcher has been made on the same plan as the Indian 'dandy,' on which severe cases can be moved with the minimum of jolting and exposure. Several new sets of capital instruments (aseptic) with sterilizers have been served out to the field hospitals, and plenty of antiseptic dressings are available. The great difficulty will be the water for drinking purposes as we near Khartoum, as it is practically impossible to carry enough filters to supply the amount of filtered water needed for both brigades, but every precaution will be taken and the water will be boiled whenever practicable. It is intended to have a Pasteur filter for the field hospitals, but where transport is such a consideration it is not always possible to carry out good intentions. The health of the troops continues good, and, with the exception of a few scattered cases of enteric fever, there is practically no sickness, but the men are getting weary of the forced inactivity, and a move will do us all good. The one item which has not been decided on yet, so far as I know is a hospital ship. This ought to be arranged for, as if we have any casualties and much sickness a properly equipped steamer at Alexandria, with all necessary medical comforts and nursing appliances, so that the patients could be put on board and taken straight to Netley, would be of inestimable value. This ship should be entirely for the sick and wounded, and should be ready at the close of the campaign. It is to be hoped that the general public will realize that upon this occasion the medical arrangements have been properly thought out and every item carefully looked after, and that if there is any breakdown it will not be the fault of the officers or men of the Royal Army Medical Corps." N. Y. Med. J., 1898, lxviii, 432.

The Morbidity of the Volunteer Forces at Chickamauga Park, Ga.—Raymond.

Through the courtesy of the Chief Surgeon of the Third Army Corps, and that of the commanding officer of one of the division hospitals, I am enabled to give a statement and numerical summary of the principal diseases that have affected the troops of the division (say 10,000 strong) during their first month in the field here, and likewise during the first month of existence of this division hospital. It is chiefly, however, upon the so-called preventable diseases that I shall touch, inas-

much as means have been taken to prevent the further occurrence of these diseases among the troops located here by very particular attention to the purification of the water-supply for potable purposes. It is believed that the sick rate will be greatly reduced for the coming month coincidently with the introduction and use of the Maignon and Berkefeld water-filters. These have been distributed as follows: For each division hospital one of each make; for each ambulance company one of each make; for each division headquarters one of each make; for each regiment ten of each make. The date of distribution of these filters is nearly coincident with the termination of the period of thirty days covered by this report on the morbidity of the troops. Consequently it will be of exceedingly great interest to compare this month's sick report with that of the ensuing month. All the waters of this park have been condemned. Before filters were received boiling of the drinking-water was of course resorted to, but failed to accomplish the desired end. Not but that the boiling destroyed all disease germs but the practice fell somewhat into disuse, because soldiers were averse to the drinking of unpalatable, lukewarm or unsightly water, and were not thoroughly convinced of the unhealthfulness and suspicious character of the streams in this vicinity and consequently the requirements enjoined were not lived up to nor could they well be rigidly enforced. Since the Maignon and Berkefeld filters have been put into operation in our own camp the men eagerly fill their canteens from the purified water-supply and feel a large sense of security from attacks of typhoid fever, diarrheas, and dysenteries which have afflicted their comrades or themselves during their encampment here.

The report below covers the period from June 10th to July 10th and accounts only for the cases of sickness of such severity as to require hospital treatment. The figures are only approximate but substantially correct. The mean strength of the command for thirty days was: officers, 406; enlisted men, 9,477; total, 9,883. The number of admissions to the hospital (none being sent there who could possibly be treated at the regimental dispensaries, or as officially designated, "in quarters") was 735. The number admitted to sick report, of course, greatly exceeds the number sent to division hospitals, and in one or two regiments the admissions to sick report for the month equaled or perhaps exceeded 100 per cent. of the regimental mean strength for the month. The result was that something had to be done to greatly diminish this sick rate or the regiment or brigade would soon be so reduced by non-effectives that preparations for an active campaign would have to be temporarily suspended. The remedy has been prescribed—means for purification of the drinking-water—and it remains to be seen how effectively it can be applied.

Of the 735 men admitted to the hospital about 450 have been returned to duty, about 25 have been sent to Leiter hospital, and 4 have died (1 of typhoid fever, 2 of cerebrospinal meningitis, and 1 of acute enteritis). About 2,700 days have been lost to the government on account of sickness in hospital. Among the more serious cases, including the infectious diseases, affecting those admitted to the hospital are the following:

Pneumonia, 14 cases or .14 per cent. of the mean strength.

Typhoid fever, 88 cases or .89 per cent. of the mean strength.

Acute diarrhea, 84 cases or .84 per cent. of the mean strength.

Malarial fever (intermittent and remittent), 194 cases or 1.9 per cent. of the mean strength.

Measles, 87 cases or .88 per cent. of the mean strength.

Mumps, 14 cases or .14 per cent. of the mean strength.

I am strongly of the conviction that many of the remittent cases of so-called malarial fever will turn out to be mild cases of typhoid fever, as I can remark from examination of the records that fewer and fewer of the remittent fever cases are entered on the register as malarial and proportionately more cases of continued fever are classified as enteric fever as the month progresses. Raymond (H. I.), Major and Surgeon, U. S. V. Med. News, 1898, lxiii, 169.

THE MILITARY SURGEON

A SUPPLEMENT TO THE

NATIONAL MEDICAL REVIEW

UNDER THE CHARGE OF

COLONEL WILLIAM H. FORWOOD,

Assistant Surgeon-General, United States Army.

VOL. I. WASHINGTON, D. C., NOVEMBER, 1898. NO. 9.

Original Articles.

AN ESSAY ON THE ORGANIZATION OF A MEDICAL DEPARTMENT FOR A VOLUNTEER ARMY OF 126,000 MEN IN THE STATE OF ——*

ITS MEDICAL STAFF, HOSPITAL CORPS, BEARER COMPANIES, AMBULANCE TRAINS, ITS FIELD RAILWAY AND WATER SYSTEM OF TRANSPORTATION FOR THE SICK AND WOUNDED, ITS FIELD AND GENERAL HOSPITALS, ITS SYSTEM OF MEDICAL SUPPY, ETC.

BY COL. BENJAMIN F. POPE, SURGEON U. S. ARMY.

U. S. BARRACKS,
COLUMBUS, OHIO, MARCH 10, 1898.

Mr. President and Gentlemen of the Lyceum:

My subject requires the consideration of the organization of the Medical Department of the Army of ——; establishment of hospitals; field hospitals; hospital corps; field, rail and steamer transportation for sick and wounded, etc.

It is assumed that the Army of ——— shall be raised from among the civil population of the State, between the ages of 20 and 45.

The State troops or National Guard, already organized and armed, will be excluded from the problem for the reason that their services will be at once required to hold in connection with the regular forces of the United States such strategic points within or without the borders of the State as will require immediate occupancy and defense.

It is furthermore assumed that this new military force will be raised in the shortest time possible—three months being the maximum—by the volunteer enlistment of the patriotic sons of ——.

The force to be raised will be designated by proclamation from the President of the United States, and it will be assumed in this discussion that 126,000 officers and men will be the allotment of the State of ——.

The scheme of organization as promulgated by the War Department, will comprise the division of the volunteer army into three army corps of approximately

*Read before the Lyceum at Columbus Barracks, Ohio, March 10, 1898.

42,000 men each. Two army corps being active and the third as a reserve, from which the former will draw their re-enforcements.

The geographical location of these army corps will not be considered by me, as that matter is within the province of the commanding General of the Army of ——.

It is also assumed that with the preliminary establishment of recruiting stations under authority of the Governor of the State of ——, some provision will be made for the physical examination of such persons as may apply for enrollment and subsequent enlistment in the service of the United States.

I deem it eminently proper that this preliminary inspection of recruits be made at local stations in order to lessen the expense of transportation of the physically disqualified, to the larger recruiting depots, and also that there shall be no subsequent delay in their immediate transfer in large bodies to the service of the United States.

Whether this medical service will be performed by officers appointed and paid by the State it is impossible to conjecture; but in the absence of any definite plan of procedure on the part of the State authorities; or in case of apparent non-action or delay, the United States will proceed in the manner to be discussed later.

It is assumed that on promulgation of the general order designating the officer who shall organize and command the new army, the Secretary of War will in nominating the general staff of the Commanding General, also designate a Chief Medical Officer of that army, who shall be a regular officer bearing the rank of colonel and Assistant Surgeon-General in the Medical Department of the United States.

In the later formation of army corps, a simultaneous designation of a chief surgeon will be made by the Secretary of War and also in the formation of Divisions. These will preferably be officers of the Medical Department of the regular army, bearing the rank of lieutenant-colonel and deputy surgeon-general, and major and surgeon respectively. These medical officers will all be immediately necessary for the formation and equipment of the Volunteer Medical Department.

They will be administrative officers exclusively during the formative period, and become the nucleus around which the incohate medico-military elements will group.

The staff of the Chief of Corps will consist of one Captain of the Medical Department, who will act as his adjutant.

The Chief of Division will have as his adjutant one first lieutenant.

The Chief of Brigade, also a lieutenant.

The staff of the Chief Surgeon of the Army will consist of one major as executive assistant, and one captain as recorder.

The number of stewards and privates of the H. C., acting as clerks and messengers will be regulated by his order.

Recruitment.—Reverting to the subject of recruitment, I would propose that immediately upon reporting for duty, the Chief Surgeon of the Army of —— shall consult with the State Board of Health and the Board of Medical Examiners with a view to the selection of 150 or more physicians and surgeons residing in the State, who might accept a temporary contract with the Surgeon-General of the U. S. A., to render their profes-

sional services as examiners of recruits, etc., during the organization of the new army. These officers are to be men fully qualified to perform such duties either by active service during or since the civil war, or through experience as medical examiners of pensions or examiners to reputable life insurance companies.

The list of candidates, having been carefully revised and the contracts so worded as to provide for the utmost freedom in the movement and location of the medical examiners, they will be at once sworn into the service of the United States, under the immediate supervision of the several Chief Surgeons of Army Corps, and assigned to duty at points of original enrollment. It is intended that the Medical Examiners shall be exclusively under the control of the U. S. Army Medical Department, acting wholly for the interests of the United States, and subject to the rules and articles of war. The State authorities shall have no jurisdiction over them.

The Work of Medical Examiners.

It is assumed that the State authorities will provide suitable rooms or offices for the reception and examination of recruits.

The Adjutant General of the U. S. Army will cause to be forwarded to the several places of enrollment, all requisite instructions and blanks, and the Chief Surgeons of Corps will visit all stations to see that they are properly equipped, and that the examiners thoroughly understand their duties. Every person presented for enrollment will be carefully inspected by the medical examiners according to instructions received, rejecting peremptorily all candidates exhibiting positive disqualification for service.

It is recognized in this discussion that the pressing exigencies of an immediately impending war, or perhaps a war already begun, will require that the physical qualifications of recruits shall be made lower than for those of the regular army in time of peace.

For this reason the medical examiners will be instructed to accept for enlistment men presenting moderate departures from the standards for height, weight, chest measure and chest mobility; for lower grades of visual defects that can be corrected with glasses, for moderate deafness of one ear, the other being sound, slight varicose veins or moderate curvature of the spine, and a certain amount of flatness of the chest, or flatness of the feet might also be disregarded.

But it should be insisted upon that all these departures from the standard be carefully noted upon the examination blanks or other form of record that they may be carefully preserved for future consideration in connection with the adjustment of claims for pension that are sure to arise.

Note.—In fixing the number of medical examiners at 150 or more, it is estimated that the whole force of 126,000 men will be required to be examined and enrolled within three months, or about seventy working days. That to get so large a number of acceptable recruits, even at the lower standard authorized, at least 250,000 men must submit themselves for inspection. As the number of rejections is now over 87 per cent. of all those presenting, there will be at least 40 per cent. of rejections under the most favorable conditions. It will be seen that there must be passed upon at least 176,000 cases, or an average of 2,400 per day, sixteen for each examiner, which is

found to be about as rapidly as a careful man can do the work and complete the record required.

Regimental Medical Service.

The organization of the Medical Service for the new regiments will, without doubt, proceed as during the war of the Rebellion.

The Governor of the State will appoint and commission the several regimental medical officers, providing each full regiment with one surgeon, with the rank of major, one assistant surgeon, with the rank of captain, and one assistant surgeon with the rank of first lieutenant, one hospital steward, two acting hospital stewards, and twelve hospital corps privates.

The appointment of the medical staff should keep pace with the building up of the regiment. Commencing with officers of the lower grade, assigning a first lieutenant and assistant surgeon to an organization consisting of one battalion, a captain to two battalions, a major to three battalions or a full regiment.

The non-commissioned medical staff is to be organized after a similar manner, one acting hospital steward for one battalion, a second acting hospital steward for two battalions and a hospital steward for a full regiment, the number of privates of the Hospital Corps will be fixed on the basis of two for every company enrolled.

To each battery of light artillery, one assistant surgeon, with the rank of first lieutenant, will be appointed, and with him one acting hospital steward and four privates of the Hospital Corps.

The complement of the medical staff for a regiment of cavalry will be fixed on the same basis as that for an infantry regiment.

With the formation of brigades, the Governor will appoint Chief Surgeons to these organizations.

Examination of Medical Officers.

It is thought that the pressure for time will be so great, that for original appointments to the lower grades of office in the Medical Department, it will be necessary to waive all examinations, relying for qualification upon the degrees held by by the applicants and their general reputation for personal aptitude, efficiency and professional skill. For the higher grades of office a closer inquiry should be made into the fitness of applicants by means of the State Medical Examining Board, and where possible these offices should be filled by promotion from the lower grades, after due examination in accordance with the regulations of the U. S. Army Medical Department. In all such cases the law of seniority must necessarily be disregarded and only those exhibiting in their short service particular aptitude, should be recommended to appear before the examining board. For later and higher grades the rule of seniority can be observed.

U. S. Volunteer Medical Staff.

The formation of a United States Volunteer Army Medical Staff Corps will come next in order. This will comprise such a number of surgeons and assistant surgeons, as will be required to fully equip the various hospitals that must be organized, without making drafts of medical officers from the several regiments of the line, a practice which during our last war resulted in depriving many commands of their proper medical attendants and crippling the service to an alarming extent. The functions of hospital surgeons and regimental surgeons should be separate and distinct,

and any detail from his command should rarely be sought by a conscientious medical officer, or permitted by his superior.

The selection of these volunteer medical officers should be from the best professional talent of the State, the lower grades of offices being filled first, and promotion by examination and military and professional record, being employed to fill the higher grades. They should all be commissioned by the President as of the same date if practicable. The order of precedence being arranged by the Surgeon-General of the Army on recommendation of the Medical Examining Board, two-thirds of whose members should be officers of the U. S. Army Medical Department.

Assignments of the U. S. Volunteer Medical Staff.

These will be made to Division and Army Corps Field Hospitals; to General Hospitals as will be set forth under the following subject headings. They will also be assigned to duty as attending surgeons at the several headquarters of the army in cities and towns where their services may be needed; at camps of recruitment and instruction; at camps of convalescents; with large supply trains; at large depots of quartermasters and subsistence supplies; with ambulance and railway trains; on hospital steamers and troop transport ships, or on any other special service that may be required of a medical officer not attached to a command.

Medical Inspectors and Inspections.

The Chief Surgeon of Brigades will keep a roster of the regimental surgeons major, and from them will make a daily detail of a Medical Inspector, who shall visit all the camps of the several regiments and at the end of this tour report to the Chief Surgeon the sanitary condition and the efficiency of their medical service. He will also inspect the ambulance train and see that the wagons are properly fitted out with litters and surgical supplies, that the animals and harness are in good order and the men, including the drivers, understand their duties.

The senior medical officer of the regiment will accompany the Brigade Medical Inspector in the tour of his camps, and will call his attention to any matters of sanitary police or defective water supply or disposal of excreta that may exist.

The Brigade Surgeon will forward a brief of this report to the Division Surgeon, for his information, keeping the original for file. Any report requiring action of the military commander, will be forwarded with remarks to the General commanding the Brigade, through his Adjutant-General.

The Chief Surgeon of Division, will from time to time, as he may deem proper, detail and require one of the Brigade Surgeons, to act as his inspector in any special case, or to examine particular defects of medical administration reported as existing within the Division and to submit his report for the information of his superior officer. Any matters requiring military action or control, will be reported by the Chief Surgeon to the Division Commander, through his Adjutant-General.

In the same manner, the Medical Director of an Army Corps, will require in special cases, a Chief Surgeon of Division to act as his inspector, in any matter relating to the medical administration of the Army Corps.

All of these inspections will be supplemented or by special Medical Inspector, appointed by the Chief Surgeon of the

Army of ——, or by the Surgeon-General.

Bearer Companies.

The number of Hospital Corps or Bearer Companies required for each Army Corps will be as follows:

For the Division, 2 companies; 120 men.

For the Corps in reserve, 2 companies; 120 men.

With the Corps ambulance train, 1 company; 60 men.

Total for the Corps, 5 companies.

For the active army, 10 companies.

For the Army Corps in reserve, 5 companies.

Total for the army, 15 companies.

These are all supplementary to the Regimental Hospital Corps men and do not include the Hospital Corps detachments forming the immediate personnel of the Division, Corps and General Hospitals.

The organization of the companies will be from the volunteers exclusively. They will be commanded by medical officers of volunteers, and they will, as separate bodies, be under the immediate orders of the several Chief Surgeons of Army Corps, to whom their several commanders will report.

Each company will consist of:

One Captain of the Volunteer Medical Department.

Two Lieutenants of the Volunteer Medical Department.

Four Hospital Stewards of the Hospital Corps.

Eight Acting Hospital Stewards.

Sixty Privates, one Bugler.

Their equipment will be as follows:

To each Medical Officer, one operating case, carried on his person.

To every Hospital Steward, one orderly pouch.

To every Acting Steward, the same.

To every Private, one Hospital Corps pouch and a reserve of splints, and surgical dressing in addition.

To every four Privates, one litter, or fifteen for the company.

Every enlisted man will have his blanket and clothing roll according to regulation, which will be carried in the company wagons.

Every officer will be mounted, and with mounted commands the enlisted men will also be mounted.

The number of wagons, six mule, assigned to each Bearer Company, will be two.

The number of water carts to transport water for the wounded, 1 for every company.

HOSPITALS.

The Field Hospitals.

The only field hospitals will be those of the Division and Corps, which experience has shown to be the best administrative unit, and to describe one will be to describe all of the eight hospitals which will be required for an army corps in ths field.

Every field hospital will be arranged to accommodate at least 500 sick and wounded men in its tentage: its supplies, its transportation and personnel.

Division and Corps Hospitals.—Personnel.

There will be assigned to duty with each field hospital one surgeon with the rank of major, who shall be its administrative head, and his detail should be from the U. S. A. Medical Department, the seniors in that grade being selected when practicable. As assistants he will have a captain and assistant surgeon from the same Department for his executive officer and a first lieutenant in charge of subsistence store and medical supplies, instruments, etc.

To be continued

Selections.

An Interesting Physiologic Experiment

has recently been carried out in the German army to test the food-value of sugar. Ten men were given a sugar-diet —just precisely what that means we are unable to say—and ten others were given the regular army-ration. The weight of the men on the sugar-diet is said to have increased during the maneuvers more than that of the men fed upon the common ration, hunger was kept down longer, there was less suffering from thirst, and exhaustion and sunstroke were more quickly overcome. We await more definite information and the judgment of experts, but would suggest that a ten-day test is altogether too brief for any scientific conclusions to be reached, as to the relative value of a preponderatingly sugar-diet in tissue-building and repair. This test suggests also how little we know of the secrets of assimilation, and that too little attention on the part of scientists has been devoted to careful experiment.—Phila. M. J., 1898, ii, 479.

Modern Small-Arm Projectile Wounds.

From a study of cases reported we may conclude that all wounds inflicted by the modern small-arm projectile require immediate protection from bacterial invasion by the application of suitable dressings and that the great majority of these wounds require this and nothing more. It would almost be inferred that the inventor of the modern bullet was possessed of surgical instincts, so harmoniously does it work in accord with modern surgical technic. In the mid-range at least we may say that it incises without devitalizing; it penetrates without infecting. Modern bullet wounds are clean wounds. Their treatment consists in keeping them clean. While the damage to the shaft of the long bones must always be considerable, the ends of the long bones suffer less; joint complications are few and amputations rare. Few bullets will be found lodged in the body because of the great velocity and penetrating power of the steel-jacketed projectile. The value of the X-ray in this class of injuries is simply inestimable. The probe with all its attending disadvantages has been relegated to a minor sphere of usefulness. The sense of sight has superseded the sense of touch, and surgical practice has advanced another step toward the ideal by Roentgen's great achievement. Since primary hemorrhage must be the cause of many deaths on the battle field, it is imperative that every soldier in our army and National Guard should receive instruction in the location of important arteries and the ordinary means of hemostasis. In such an emergency many lives could be saved by the intelligent efforts of a comrade. We might, too, with advantage, teach the value of the first-aid dressing and its proper method of application. The maxim of Nussbaum cannot be too strongly emphasized: "The fate of a patient seriously wounded is almost entirely in the hands of the surgeon who applies the first dressing." Medical News, 1898, lxxiii, 577.

The Inefficiency of Nonconsolidated Field Hospitals.

The Indian Medical Gazette for July has the following remarks in an editorial upon Field Hospitals in the Tirah Campaign: Their Defects and Remedies. They emphasize in a remarkable manner the very points laid down in our leading article on The Breakdown of Medical Supplies in Cuba in our issue for August 6th. It is generally admitted, says our contemporary, that the field hospitals proved to be too cumbersome for the mountain warfare in Tirah; and as a consequence, despite the untiring exertions of the medical officers, many brave lives were lost which otherwise might have been saved had the hospitals been more mobile. The sheer size and weight of all the equipment has seriously impeded the efficiency of the hospitals, and to this were superadded the defects of organization, an indifferent transport, insufficient guards, crowding in camp, etc. The Gazette then examines the chief defects in detail, and endeavors to point out

their remedies. As to organization, it says that the various individuals of the establishment of the field hospitals were collected from all parts of the empire. Medical officers from various commands were put more or less indiscriminately together. The medical subordinates were collected in the same way. They were strangers to each other, and to the medical officers under whom they served. And it was the same with regard to menial servants, the commissariat and transport subordinates attached, and the remainder of the personnel of the hospital. The result was that at the beginning of the expedition, when the work was the most arduous, the field hospitals were wanting in cohesion, and the medical officers, with a few exceptions, had had no previous training in working them. Almost without exception the medical subordinates had to be taught their special duties; and it was only when the active part of the campaign was over that the hospitals really began working as cohesive units. No one, says the Gazette, would venture to take a few men from a number of different regiments, from all parts of India, put them together just in time to take part in an expedition, officer them from regiments in other provinces, and expect them to do good work. Yet this is what is done in the case of field hospitals. The Gazette concludes this portion of its article as follows: "Troops are constantly being trained for war service in camps of exercise. Can not the same be done with field hospitals? These are stored at the medical store depots, as well as at various other centres throughout India. Would it not be possible to so arrange that the establishment of the hospital could be taken from the district in which the hospital is located? Each of these hospitals could have a more or less permanent establishment during peace time; and during camps of exercise, the hospital should be mobilized, and medical officers and subordinates made familiar with its equipment and working. A roster could be kept showing the numbers of the next hospitals for service. When war broke out, each man would then know his place and duties, and the hospital would be in a position, from the very first, to treat the wounded promptly." N. Y. Med. J., 1898, lxviii, 239.

Typhoid Fever in the French Army.

In 1895 the Eleventh Army Corps of the French army numbered about 11,000 men, of whom some 600 had typhoid fever every year. Something less than 100 of these patients died. Since 1886 the mortality has never reached 30; while in 1896 there were only 8 deaths, and in 1897 only 7 from this cause in this large body of men. The officers have been learning their lesson, and as a result the number of cases of typhoid fever which developed annually in this portion of the army has been divided by 24, and the mortality from typhoid by 25.

It was not by reason of natural surroundings that the present favorable figures have been obtained. The Eleventh Corps is stationed in one of the worst districts of France, a region of which it has been said, "Tuberculosis kills the inhabitants and typhoid fever keeps the doctors alive." Most of the villages are in an unsanitary condition. Leaky privy-vaults and open ditches containing fecal matter contaminate the subsoil, while in the absence of running water, well water is used for drinking and cooking. The municipal councils are for the most part innocent of any knowledge of hygienic laws, and public disinfection, isolated treatment of infectious disease, or even official notification of the same are usually neglected. Nevertheless in such unfavorable surroundings the sanitary corps of the army has been able little by little to introduce measures which have raised the standard of health in that district, until its soldiers show the very best record of the whole army. These sanitary measures are briefly: Continuous ventilation of the sleeping apartments; frequent whitewashing of the walls; rendering the floors impervious by coal-tar; removal of dust in a moist condition; introduction of hand-basins and shower baths; increased rations in the field, and a greater variety of food; substitution of tight movable

water-closets for the old privies and ditches.

The Vital Statistics of the War.

Washington, D. C., Nov. 12, 1898.

To the Editor:—In a communication in the Journal of October 29 I directed attention to the unsubstantial basis on which an editorial writer in the *Philadelphia Medical Journal* made a demand, on behalf of the medical profession, for an explanation of the fact that the ratio of death from disease to death from all causes was greater in the Spanish War than in the Civil War. The pressure of official business was so heavy that I was unable to discuss the conclusion admissible from the figures given by the journal cited, or to give some statistics which I am confident would have been regarded with interest by the members of the American Medical Association, but this I propose now to do.

The statement was made that death from disease formed 66.6 per cent of the total mortality in the War of the Rebellion and 88.1 per cent in the Spanish War. Accepting these figures at their face value, for I have not considered it worth while to verify them, we learn simply that more men were killed and fatally wounded out of every hundred who died in the service of their country a third of a century ago than in the recent war. This we can readily understand, when we recall the fact that on July 21, 1861, when the first serious clash of arms took place between the North and South at Bull Run, Va., nearly as many men were wounded and nearly twice as many killed as in the whole Spanish-American War. This one fight was but the beginning of a series which ran the list of battle fatalities up to the terrible total of more than ninety thousand deaths. It may, however, be claimed that the difference between the ratios in question was due, not to a greater prevalence of battle casualties in the former war, but to a greater prevalence of fatal disease in the late war. This can not so readily be accepted as an explanation, although a great deal has been said, written and printed about the sickness at Santiago, Chickamauga, Alger and other camps where our volunteer troops were aggregated. We may not assume that the sickness which affected our young men was more extensively disseminated or more deadly than that from which their fathers suffered in the earlier war, because, as a matter of fact, we know that it was not so. Time has dulled the National memory of what happened in the days of the Civil War. Perhaps the remembrance of those times remains fresher with myself than with most others, not because I was with the troops in the field until the end came at Appomattox, for many others had as full an experience of army life in the field, but because it afterward became my duty and my high privilege to spend over three years of my life in studying the records of sickness, while compiling the third part of the medical volume of the "Medical and Surgical History of the War." That history is on our shelves, and by referring to it we may at any time find out how diarrhea and dysentery, typhoid fever and malarial diseases swept through our camps and sent their thousands to the hospitals and to their graves. We may also compare the deaths recorded by the medical officers of those days with the deaths recorded by the medical officers of the present time, and should we do so we would find overwhelming testimony to the effect that any differences discovered in the percentage of deaths from battle, casualties, and from disease, are not due to the greater prevalence and fatalities of disease in the recent struggle, but to the number of sanguinary battlefields of the Civil War.

In April, 1861, President Lincoln called for 75,000 volunteers, but it was not until after July 22, when his call for 500,000 was made, that we had armies comparable in size with those recently in existence. Beginning then with July 1861, when we had medical reports from regiments aggregating only 69,118 men, and including August, September, October and November, five months, we find recorded a loss by death of 3075 men in the reports sent in by medical officers, from an average strength present of 177,690 men, or 17.31 deaths out of every thousand men during that period of five months. More deaths occurred than

were reported, for some surgeons failed to send in reports; but the probabilities are, that, had the missing reports been forthcoming, the deaths would have continued to have the same proportion to the reported strength.

In April, 1898, President McKinley called for 125,000 men and later for 75,000, which, with an increase in the regular Army and the immune and other special regiments, made a total of over 270,000 men. Beginning with May, 1898, for which month we have medical reports in the office of the Surgeon-General of the Army from regiments aggregating 151,685 men, including June, July, August and September, five months, we find on file a loss by death of only 1715 men reported by medical officers, in an average strength of 167,168 men, or 10.21 deaths out of every thousand men during that period of five months. More deaths occurred than were reported, for some surgeons have failed so far to send in reports, but the probabilites are that were the missing reports forthcoming, the additional deaths would be associated with a proportionate increase of the strength. This proportion of deaths to a strength of 270,000 men would give 27.70 as the total of reported and unreported deaths.

According, then, to the testimony of every medical officer who has placed himself on record then and now, we lost in the five months of the war with Spain 10.21 men out of every thousand reported present by medical officers serving with them, and in the first five months of the War of the Rebellion, 17.31 out of every thousand similarly reported present. This is interesting, but it is still more so, if we look a little more into the details of these reports. During the month of May last the death rate was low, .46; it was somewhat higher in June, .70, or the equivalent of an annual rate of 8.4 per thousand. In July it rose to 2.15 for the month or the equivalent of an annual rate of 25.8 per thousand. In August, owing to the rapid spread of typhoid fever in the camps, and to the broken down condition of General Shafter's Corps, it reached 4.08, equal to an annual rate of 48.96, such as was common in cities before the era of municipal sanitation. The War Department immediately put forth its energies to remedy this condition of affairs and with such efficacy that the death-rate in September fell to 2.45. If it be claimed that this falling off was due to the fact that the typhoid infection had done its worst and that, irrespective of all sanitary measures, the death-rate would have fallen owing to the exhaustion of susceptible material, we have merely to consider what was the history of our Civil War camps subsequent to November, 1861, when, as I have stated, the number of deaths had already amounted to 17.31 per thousand of the strength present. In that month of November the rate was 4.27, or somewhat more than our recent maximum of August last; but the next month, December, showed no sign of decrease, for 1578 men died, or 4.69 per thousand. During January, 1862, the ravages of disease continued, 1664 men having been swept away by death, or 4.84 out of every thousand present. In February the rate was 4.79 and in March 6.08. In April the culmination was reached when 3331 deaths were reported, constituting a death-rate for the month of 8.42 per thousand, a rate twice as high as that reported from our camps in August last.

This is a startling record. Mortality from disease reached its maximum in the camps of our Civil War only at the end of ten months, if we count from July, 1861, or at the end of twelve months, if we count from May, 1861, when 47.56 men had been buried out of every thousand of strength present, or, to put it otherwise, the maximum monthly mortality was reached only after ten or twelve months of suffering, during six of which the mortality was greater than that of the disease which did so much harm in August last. In that month the country became excited over the hysteric utterances of yellow journalism, with 4.08 deaths per thousand, and the *morale* of the Army became broken by making the volunteer believe that never in the history of armies had men suffered from disease as he and his companions had suffered. Yet 37 years ago the flower of the manhood of this country, after months of deadly losses, suffered in April, 1862, more than twice the loss incurred in August last, and instead of going home on sick furlough they girded up their loins for the attack on Richmond, by way of the Peninsula.

Respectfully, CHARLES SMART,
Deputy Surgeon-General, U. S. A.

THE MILITARY SURGEON

A SUPPLEMENT TO THE

NATIONAL MEDICAL REVIEW

UNDER THE CHARGE OF

COLONEL WILLIAM H. FORWOOD,

Assistant Surgeon-General, United States Army.

VOL. I. WASHINGTON, D. C., DECEMBER, 1898. NO. 10.

Original Articles.

AN ESSAY ON THE ORGANIZATION OF A MEDICAL DEPARTMENT FOR A VOLUNTEER ARMY OF 126,000 MEN ETC.

(Continued from November Number.)

By Col. Benjamin F. Pope, Surgeon U. S. Army.

The professional Staff will consist of Volunteer Medical Officers—as follows:

Three Surgeons as Operators and to each of these at least two assistants, making twelve Medical Officers in all.

There will also be detailed with the hospital an Assistant or Acting Assistant Quartermaster, who shall receipt for all tentage, equipage and other Quartermaster property and for all wheel transportation and public animals assigned to the hospital. He will under the Surgeon in Command have control of the same and keep it at all times in good order.

Enlisted Personnel.

Of enlisted men there will be three hospital stewards, six acting hospital stewards and forty-two privates of the Volunteer hospital corps whose duties will be exclusively with the hospital as cooks, nurses and attendants.

Material of the Field Hospital.

Its tentage will consist of 64 hospital tents for the sick exclusively, each one of which will accommodate eight patients. Three (3) tents placed end to end will constitute a ward of 24 beds.

There will be 4 tents for the dispensary, the operating room and hospital stores.

Four (4) tents for kitchen, mess tents and subsistence stores. Total 72.

There will be (7) wall tents for the officers and the Hospital Corps will use their own shelter halves.

The tent flies will be packed by themselves with a sufficient number of uprights and ridge poles and pins so that at need, additional shelter can be constructed for an overplus of wounded.

Furniture, Bedding, Etc.

With an actively moving command, the field hospital will necessarily be restricted as to the amount of furniture and bedding that can be transported by wagons.

If every wounded soldier could be accompanied by his own blanket and shelter half, the number of hospital blankets might well be reduced to a minimum allowance.

Bedsacks (that can be readily filled and and empted with straw or leaves) should be packed in bales and take the place of mattresses. Pillow sacks and cases should be supplied: these can also be stuffed either with straw or leaves or the clothing of the soldiers.

The shelter-half will make a serviceable part of the bed and may also be thrown over the blanket as a rain cover.

A certain number of drawers and shirts should be provided, for in nearly all cases of wounding, the soldiers clothing is sacrificed, as being too badly torn and soiled with blood and dirt ever to be used again. To make good this loss, extra clothing should be collected by the Quartermaster of the hospital to be issued as needed.

In order to still further reduce the impedimenta of the field hospital all litter bearers bringing patients to the same, should see to it that the soldier's haversack and its contents together with his blanket shelter half and canteen accompany him, and the bearers should also be instructed to bring in stray articles of that nature found upon the field to supplement the hospital supplies of table ware, bedding, etc.

When patients are forwarded to the base hospitals these articles can be dispensed with, or turned over to some designated officer who will account for the same. At the base or general hospital there will be an abundance of all necessary supplies.

To properly equip the field hospital a certain amount of furniture will be indispensable, to wit:—

3 Operating tables.
3 Tables for Dispensary use.
6 Common tables or tressels for the mess tent, size 10 x 3½ ft. each.
3 Field desks with stands for same.
12 Folding chairs.
24 Canvas folding cots.
12 Folding bedside tables for patients who will require to be kept off the ground from the first.

The schedule hereto attached will show in detail what will be needed for every hospital.

For a Division Hospital.

Tentage and Camp Tools, etc., for a Division Hospital:

72	Tents.	
72	"	flies.
144	"	poles.
72	"	" ridge.
1296	"	pins large.
1728	"	" small.
7	"	wall.
7	"	" flies.
14	"	" poles.
7	"	" " ridge.
91	"	" pins small.
56	"	" " large.
30	Axes and helves.	
30	Spades.	
30	Mattocks and helves.	
30	Buckets.	
30	Hatchets and helves.	
2	Field cooking ranges complete.	

Bedding, Furniture and Miscellaneous, for a Division Hospital.

500	Blankets, gray.	
50	"	cases for packg.
500	Bed ticks.	
500	Pillow ticks.	
1000	"	cases.
1000	Bed sheets.	
1000	Drawers.	
1000	Shirts.	
500	Quilts, colored.	
1000	Towels.	
250	Plates, tin.	
150	Basins, wash hand.	
250	Cups, tin.	
500	Spoons.	
500	Knives.	

500 Forks.
3 Mess chests, complete.
48 Lanterns.
1000 " candles.
3 Operating tables.
24 Field cots.
24 " commodes.
24 " tables, bedside.
12 " chairs, folding.
6 Common tables with tressles 10 x 3½ ft.
3 Field desks.
3 Desk tables.
3 Folding arm chairs.

Heating Apparatus for Field Hospitals.

In winter every three tents which go to form a hospital ward will have one large Sibley stove and a proper amount of piping. If stoves cannot be obtained, trenches will be dug beneath each ward 2 feet wide, 2 feet deep and 45 feet long covered with iron plates—flat stones or railing iron all chinked with mud. At one end of the trench a chimney will be built of mud and stones or of sods, at the other end a large opening will be made for a fire box. The draft is to be regulated by iron plates placed in front of the same. With the apparatus described a series of tents can be made very comfortable in winter as I can tell from personal experience in using the same.

Where fuel is plentiful open fire places may be constructed, which will give better ventilation but less heat.

Medical Supplies

of the field hospital will be drawn from the reserve maintained near the army corps hospital.

(See section on Medical Purveying.)

The Surgeon in command of the division hospital will make timely requisition through the Chief Surgeon of the corps for all that he will need to replenish his stock. Five days supplies in advance of current needs being always retained in the medicine wagons. As the wagons are exhausted they will in rotation be returned to the reserve to be exchanged for those that are filled.

The exact nature and specific amounts of these stores will not be discussed in this paper as they will be fixed by the regulations of the Army Medical Department for the field.

Subsistence Stores.

Five days rations and extra diet articles sufficient for the personnel of the hospital and for five hundred patients will be at all times in the hospital commissary.

A part of these stores together with a part of the medical supplies and some tents will form the load of every wagon so that in no event will the sick and wounded suffer entire lack of supplies or shelter by reason of the loss or delay of certain wagons.

Before leaving this part of the subject it should be stated that the organization of Field Hospitals will include their division into three sections each one of which will be as nearly independent as possible under a single unit of administration. The tentage and equipment and transportation will be as equally divided so that a single section can be unpacked without disturbing the others. Where minor engagements occur or a rapid change of front or other movement of the division is anticipated, whether the whole hospital or only a part shall be utilized will be determined by the Chief Surgeon of the division after consultation with his commander.

Again in case of a heavy engagement of the Army Corps the Medical Director will determine the location of the several Division Field hospitals, when they shall be united at the point of greatest pressure

or separated equally along the line and whether they shall be unpacked as a whole or in part. The controlling idea being to provide with the greatest elasticity and freedom of movement; the most complete readiness for abrupt changes of base, consistent with the proper care of all the sick and wounded men that may be brought from the front.

In time of action or when after a battle, a great accumulation of wounded occurs, the Chief Surgeon of Division will according to necessity detail from among the Regimental Medical Officers, a sufficient number of operators and assistants to report to the Surgeon in charge of the Division Hospital, or to the ambulance dressing stations, with their field equipments of Medical and Surgical supplies, to render such aid as may be temporarily needed; when the stress is over, these officers will return at once to their several commands.

Such detail of operators should be published in advance so that the Officers concerned may be at all times prepared for the summons, but in no instance should a regiment be left without at least one Medical Officer on the field.

Again the Chief Surgeon of a Division will if necessity arises, supplement the force upon the field by the detail of such Medical Officers attached to Division and Corps Hospitals as may be temporarily required if they are not otherwise needed.

Army Corps Hospitals.

The army corps hospital will form a reserve for the reenforcement of the hospitals of division. Its personnel and equipment: its tentage supplies and transportation will be the same as that of a division hospital. It will be under the immediate control of the Chief Surgeon of the Corps.

In addition to its fixed personnel there will be attached two bearer companies of the hospital corps: organized officered and equipped as already described.

In time of action this hospital and the bearer cos. will be placed, by direction of the Chief Surgeon after consultation with the General commanding the Corps at a point of easy communication with all the Division Hospitals in order that it may move to the assistance of any division that may be hardly pressed.
It will later be located on the best and and shortest route to railway or steamer connection so that it can become a shipping depot when the order is given to unload the field hospitals of division.

In no sense will it become a general hospital for the retention of patients or lose its mobile character.

On long wagon routes the corps hospital will be utilized as a place of rest and refreshment for the sick and wounded.

When this purpose is fulfilled its location will be changed according to the movements of the corps. At or near the corps hospital will be parked the ambulance train or such part of it as may be directed by the Chief Surgeon.

Wagon transportation for the Division and Army Corps Hospitals.

There will be permanently assigned to every division corps hospital twelve (12) six mule wagons; six (6) two horse wagons for medical supplies, one for each brigade, one for the division hospital and one for the reserve; three (3) one horse water carts making a total of twenty-one vehicles and eighty-seven animals to haul the tentage, subsistence and medical stores, forage, furniture, etc.

While this train will be under the control of the Medical Officer commanding the Hospital, its immediate charge

will be the Quartermaster of the hospital who will as in the case of the ambulance train, receipt and be responsible for all public property of the Department to which he belongs which may be issued to him. For this transportation he shall have his own drivers, blacksmith, artificer, saddler, traveling forge and all necessary tools to keep his outfit in good order. He shall under the direction of the Medical Officer in command make timely requisition for wagons, or parts of same, harness and animals to supply all losses and breakage that may occur. He shall have his train always ready for service and by daily inspection see that everything is in complete order. He will have at all times at least five days forage for his animals, five days rations for his men, and a complete messing outfit that will be independent of the hospital to which he is attached.

It is believed that the railway network covering the State of —— will permit a great reduction in the number of baggage wagons that might be required over that found necessary during the civil war.

It is thought that the distances between the field hospitals and railway stations or terminals will ordinarily be so short that wagon trains will be able to make frequent trips to and from the hospitals and that in many instances the field hospital will be able to depend largely upon railway transport for its tentage and more bulky supplies.

The General Hospital.

The General Hospitals of the Army of the ——, will be established by direction of the Secretary of War, at such points as may be selected by the Surgeon General of the Army. They will be four in number and a description of one will apply to all of them, except as to minor details. The hospital wards will be constructed of temporary frame buildings, 170 feet long, 24 feet wide, 11 feet to the plate, each of a capacity of fifty beds, allotting to each bed a floor space of at least 72 superficial feet and air space of at least 800 cubic feet per bed. Attached to each ward, will be a water closet, containing at least six enameled flushing bowls, one slab urinal and six bath tubs, preferably of iron. There will be separate apartments for the nurses and wardmaster, also a room for storage of ward supplies. In winter they will be heated by base burning coal stoves, and ample movable openings will be made in the ceiling of every ward and also by means of sub-floor air ducts, to facilitate ventilation.

Of these pavilion wards, there will be constructed, one hundred at each general hospital. In addition to them there will be constructed, the necessary administrative buildings, kitchens, mess rooms, storehouse, laundries, dispensaries, surgical operating rooms, quarters for commanding Medical Officers and their staffs and their assistants, carpenter shops, a blacksmith shop, stables, quarters for the guard and its commissioned officers, in all some one hundred and fifty buildings. The selection of a plot of ground, its accessibility by rail or water transportation, its preparation for suitable sewerage and water supply and gas, and the general plan of the arrangement of the buildings, in such groups as will conduce to effective administration and supply, together with the most careful consideration of all hygienic conditions will be determined by a board convened for that purpose, by the Secretary of War, which shall consist of at least two Medical Officers and one officer of the Q. M. Department. The revis-

ion of all proceedings, being in the hands of the Commanding General, and the Chief Medical Officer of the Army of the ——.

In laying out the hospital, I would personally favor the plan of arranging the pavilions in groups of five, each group to have its administrative center, which would be a building, containing a kitchen, a mess hall, an office for the Surgeon, a dispensary and store room, on the first floor, and living rooms for the non-commissioned staff, in the second story. In the adjacent building, there would be the quarters for the medical staff, that is for one Surgeon and four assistants.

The exact plan of the groups, would necessarily be determined by the configuration of the ground selected.

The *Personnel* of the General Hospital, will be as follows:

One Surgeon, with the rank of Lieut. Colonel, in the Army Medical Department, to command. One Executive Officer, with the rank of Major, in the same department, one Captain and Quartermaster, U. S. Army, one Commissary Officer, one Captain and Assistant Surgeon, in charge of the records and one Captain and Assistant Surgeon, in charge of the medical, surgical and hospital supplies. Four Lieutenants of the line, in charge of the hospital guards, the senior commanding the guard under instruction of the Hospital Commander.

The *Professional Staff* of the general hospital, will be as follows:

One Assistant Surgeon of Volunteers, to every fifty patients under treatment in the hospital, and one Surgeon to every 250 patients.

Each Surgeon will have direct charge of his own ward containing grave surgical cases and a supervising charge of one division, consisting of five or more wards according to the needs of the service.

From among the Surgeons and Assistant Surgeons, will be selected by the commander of the hospital, such a number of operating staffs, as may be required, professional skill rather than conditions of rank, guiding him in all such details. To every operator there will be assigned three Assistants and the necessary number of Stewards and Privates of the Hospital Corps, to complete the staff.

It is proposed that each general hospital, shall be planned to accommodate five thousand patients, this being the maximum unit of medical administration.

Connected with each general hospital will be a train of 30 ambulances, under command of 1st Lieut., who shall receipt for and be responsible for all ambulances and their equipments together with all animals pertaining thereto.

The *Enlisted Personnel* of the hospital will be as follows:

20 Hospital Stewards, 40 Acting Hospital Stewards and 250 Privates of the Hospital Corps, who shall be assigned by the Commanding Officer, as cooks, nurses, attendants and bearers, according to the best interest of the service.

Guard.

There will also be a guard of at least two companies of Infantry, under the command of a field officer, with the rank of Major. The said officer to receive his orders from the Surgeon commanding the hospital, in all matters pertaining to the protection of public property and the preservation of order in the hospital.

Continued in January number.

Selections.

Camphorated Tincture of Opium in Cuban Malaria, Mixed Malaria, and Typhoid-Fever Infection.

At the beginning of my service at the Roosevelt Hospital on the first day of September, last, I found in my wards 61 cases of Cuban malarial fever in soldiers who had contracted the disease at Santiago. The duration of their illness before coming to Roosevelt Hospital had ranged between 20 and 40 days. In all instances they had been treated first with quinin, and in a large proportion this had been supplemented by free dosing with Warburg's tincture, and with arsenic. Subsequent to September 1st and extending to October 20th, 39 additional cases were admitted, making 100 in all, besides a group of mixed malarial and typhoid-fever cases, to be referred to later. Of this list 63 were actively febrile, the temperature ranging from 103 to 107°F. Of these 40 per cent. had chills, with the usual succession of symptoms, but with true intermissions in only 10 per cent. The chills were irregular rather than periodical in the remaining 30 per cent. The remaining 60 per cent. of the febrile patients had no chills, and the course of the fever in them was very variable, the temperature range rising and falling with such irregularity that the curves on the charts were in this respect characteristic of the affection and in marked contrast with those of typhoid fever. The plasmodium malariæ was found in 90 per cent, of all the cases, in some, however, not until after repeated examinations. The commonest forms were crescentic. Some patients showed relatively large crescents, and some small. These crescents were often very numerous, occasionally markedly so in groups of patients who had been admitted together, as if they had been equally exposed to the same infection. Besides the crescents there were many actively motile extracellular bodies visible which were very small and round in contour. Masses of free pigment were often seen in the field as well as in the white corpuscles. Only one definite separate flagellum was detected, but more might have been found but for press of time. In their clinical features the most pronounced effect on the patients of the infection was anemia, with emaciation, often extreme. After admission to the hospital some 65 of these patients were treated for fourteen days by careful feeding and nursing, in hopes that the change from camp and transport conditions would of itself be beneficial, and, along with this, quinin in doses of from 30 to 60 grains a day was administered, or Warburg's tincture in 1-2 ounce doses three times a day, while others were treated with arsenic, either alone or added to other drugs. The general results, however, had been unsatisfactory. In some cases the quinin held the temperature for a few days, but only to be followed by relapses. Its best results were in small number of patients who showed periodical remissions. Warburg's tincture seemed to be more successful than quinin, but arsenic, though pushed to the production of digestive disturbances, appeared to be of very doubtful effect. Cold baths were used for six patients with high temperatures, but they did not bear the baths well, while the course of the fever not being modified thereby, the baths were abandoned. The report of this experience of two weeks in the management of these patients led me to try a modification of treatment as follows: Fifteen grains of quinin with 15 grains of powdered ginger were administered twice a day, once in the forenoon and once in the afternoon, with 1-2 an ounce of the camphorated tincture of opium and a like dose of the latter without quinin at 10 p.m. An ounce and a half of paregoric, equal to 3 grains of opium, was thus taken daily. All the patients with whom this was first tried, 47 in number, were actively febrile, 84 per cent. of them severely so. In order, however, to test comparatively the effect of this medication 14 febrile cases, of whom 65 per cent. were severe, were treated with Warburg's tincture alone, as controls.

The results were as follows: In 22, or 47 per cent. of the number who took

paregoric the result was an immediate break in the fever, that is, the temperature fell to normal within 24 hours, nor did it rise again afterward. This effect was the more impressive because in every instance they had been unavailingly treated for an average period of ten days previously without reducing the fever. The treatment was then continued from 7 to 14 days when the men were discharged. No relapse was recorded in the case of any patient who took the paregoric treatment after the temperature was once reduced to normal. In 5 cases, or 10.6 per cent., the paregoric treatment could not be continued on account of its causing nausea. These patients were then treated by the above doses of quinin and ginger alone, with a relatively slow recovery, except in 1 case which soon yielded to a third dose added to the usual prescription. The remaining 6 cases out of the 47 proved in time to be cases of mixed infection of malarial and typhoid fever. The differential diagnosis in these patients was at first difficult, but in time was readily demonstrated. Other than among the 5 above mentioned who could not take the paregoric without vomiting, there were only 2 patients who showed any of the ordinary symptoms of opiates. The remainder had no narcotic symptoms whatever, but quite the reverse, the paregoric seeming to raise them out of their stupor, and the patients almost invariably spoke of their feeling generally much better and stronger immediately after taking it.

Of the remaining 39 out of the total of 100 patients, 26 were admitted as convalescents without any fever. They were, however, in a very reduced state, the greater number being very anemic, and the plasmodium malariæ was found in 80 per cent. of them, often in as large a proportion as in the febrile patients. They were all treated with the paregoric, quinin, and ginger, the same as the febrile patients, with apparently just the same beneficial results as appears in the following summary of the general effects: Of the 39 afebrile patients admitted as convalescents in only 4 was it reported that they were unable to take the paregoric with benefit. While taking the paregoric they were treated for the anemia with a pill of 2 grains of iron sulphate, 2 of black pepper, and 1 grain of powdered nux vomica.

From both the blood examinations and the clinical features of the fever, it is evident that the Cuban malarial parasite with which we had to deal belonged to the estivo-autumnal type, and that its cycle of development in the blood was very irregular in time, so that a corresponding irregularity resulted in the febrile reaction connected with the times of sporulation of the parasite. This would seem to indicate that the specific action of quinin, so well marked in our American tertian and quartan fevers, is best secured during the afebrile periods, or only at certain stages in the life history of the parasite, but that in the more or less continuous forms of malarial fever it loses much of its effect. The only patients among our present group in whom quinin was singly effective were those, as above-mentioned, who had definite intermissions When, therefore, we have to deal with an infection which does not afford us any regular intermissions the action of quinin is still valuable, but it greatly needs to be supplemented by other remedies. Increasing the doses of quinin in such patients does no good whatever. One patient stated that he took 40-grain doses three times a day, and thought that it made him a great deal worse.

It has been a matter of common experience, especially in the treatment of malarial fevers in the tropics, that the action of quinin appears to be promoted by the simultaneous administration of various spices. Warburg's tincture doubtless owes much of its efficiency in chronic malarial disorders to its predominant proportion of spices. I have been accustomed , therefore, for many years to prescribe powdered ginger along with quinin, in equal quantities, and I have felt convinced that I can get along with smaller doses of the quinin itself by adding the ginger, in the treatment of our ordinary intermittents.

In a number of cases I add pulverized capsicum, 1 grain to 4 of quinin. I have known ginger alone, administered in free doses in hot milk to break up chronic ague of the quartan type, when quinin had conspicuously failed.

Opium is one of the most ancient of remedies in the treatment of malarial fevers.

In this century it was highly praised by Lind in England, and by Dickson of South Carolina, to break up the cold stage, and Dickson cites approvingly its employment by a number of physicians in our Southern States in the treatment of their so-called bilious remittent fevers, in combination with camphor, administered every three or four hours.

It is interesting to note in this connection some of the conclusions of the British Royal Commission appointed to investigate the opium question in India in the years 1893-94. In this voluminous report of the testimony of 900 persons, in reply to 28,000 questions propounded by the Commission, a large majority of the replies were in favor of the use of opium as a prophylactic and antidote to malarial fever in India. Sir William Roberts maintains that the antimalarial properties of opium are due to its alkaloid, commonly named narcotin, but which he claims should be termed anarcotin, as it has neither anodyne nor narcotic properties, but acts instead as an antiperiodic. Anarcotin, as an antiperiodic, was brought to the notice of the Indian Government fifty years ago as a substitute for the then scarce and expensive quinin by Sir William O'Shaughnessy, 1838, who reported 138 cases of intermittent and remittent fevers treated with it with 65 per cent. of cures. These results, and others of like character, induced the Indian authorities to institute further experiments, and these proving favorable, they caused anarcotin to be prepared in quantity at the laboratories of Ghazipur and Patna, and distributed to the medical depots throughout India. Sir William Roberts then cites two communications on the antiperiodic powers of anarcotin which are based upon a large experience, and claims that they prove incontestably that anarcotin is scarcely inferior, and in some classes of cases is superior, to quinin. The first communication from Dr. Palmer reports the results in 980 patients treated by doses of from 1 to 3 grains of anarcotin. He states that in 70 per cent. the fever was aborted at the second paroxysm after the medicine was administered, in 20 per cent. the arrest was equally sure, but was not quite so quick, and in 10 per cent. the remedy failed. He further remarks that there are cases in which anarcotin is decidedly more afficacious than quinin, when quinin has been given for a long time without effect. The second report from Dr. Garden on the use of anarocotin in 684 cases of malarial fever in the same district is very much the same as that of Dr. Palmer.

Whether the beneficial effects of the camphorated tincture of opium in the cases included in my report were due to an ingredient of opium capable of acting directly upon the plasmodium malariæ as quinin does, I am not prepared to say. I am rather inclined to the opinion myself that the opiate acted as a stimulant which enabled the system to cope better with the malarial toxemia, and on that account I chose the camphorated tincture in preference to any other preparation of opium on account of its more pronounced stimulating properties due to the addition in the preparation of camphor, benzoic acid, oil of anis, and alcohol. However that may be, the effects of this preparation were in great majority, as above noted, the very reverse of narcotic, and more like those of both a cardiac and nervous stimulant.

With reference to the cases of mixed infection of malarial and typhoid fever there were six instances. All of the patients had a history of malarial fever previous to the development of the symptoms of typhoid fever, and in each of them the plasmodium malariæ was found on admission to the hospital. They all ran the usual course of typhoid fever,

and in four of them the plasmodium had entirely disappeared from the blood when they became convalescent. The typhoid fever itself was treated according to our ordinary hospital treatment without any quinin throughout. In 2 cases however, after the patients seemed to be fairly convalescent from typhoid fever, they were attacked with chills and sharp rises of temperature, and with a reappearance of the plasmodium in the blood. However, these soon yielded to the quinin and ginger treatment without paregoric.

Thompson (W. H.) Medical News, N. Y., 1898, lxxiii, 777.

Some Points on the Recent War.

The Mauser Bullet.—At a greater range than two hundred yards the Mauser bullet gave a small wound of entrance, and only a slightly larger wound of exit. In several instances the Mauser bullet passed through the skull and out again without producing any apparent injury to the brain, and the men returned to duty in two or three days.

The Spanish Explosive Bullets.—The explosive bullets used by the Spaniards consisted of a brass coating containing soft lead. They were used by the Spanish volunteers, who fired them from the old Springfield rifle. Their passage through the air was accompanied by a peculiar humming sound, and there was a short, sharp pop as they exploded. Although the use of these bullets had been denied, there were now so many observations regarding wounds produced by them that there could no longer be any room for doubt on this point.

Dressings and Wounds.—The simplest antiseptics were found to answer best. The use of iodoform was almost abandoned, because in the tropics it was apt to cause undue irritation of the skin, and was prone to be absorbed in dangerous quantities. The first-aid packets rendered valuable service.

The Mortality.—In this campaign there were two hundred and eighty killed and four hundred wounded; but only sixty-five of the wounded died of their injuries.

Effect of Distance on Bone Injuries.—If the wound was received within five hundred yards, the class of fractures was entirely different from those received within eight hundred yards. Nearly all the wounds at El Caney were from bullets at a distance of five hundred yards, whereas at San Juan most of the injuries were received at eight hundred yards or more. The bone injuries on the former battlefield were characterized by a great deal of comminution, while at San Juan there were numerous instances in which the ball passed through the long bones without producing splintering. It was here that the man was shot through the the posterior portion of the skull without receiving any obvious injury of the brain.

The effect of the Krag-Jorgensen Bullet.—The Krag-Jorgensen bullet at short range was found to be explosive, like the Mauser bullet, but the range of the former was shorter by three or four hundred yards.

The Spanish Wounded did Badly.—In the fourteen hundred and fifty cases treated at Siboney, there were only four deaths up to the 7th of July. Traumatic fever was almost unknown in the camp. It was quite different with the Spanish soldiers. Those who received wounds in the naval battle did badly. There were no clean wounds here, so that amputations instead of resections were demanded. The Spanish soldiers did not have the antiseptic pads, as did our own soldiers. Dr. Bell was convinced that the lives of hundreds had been spared by the use of these pads.

Immunity from Tetanus.—Dr. Bell said that he had not seen a single case of tetanus, and knew of only one case that had been reported, and that occurred at Miami, Florida. Possibly this immunity was largely due to the great care taken to carry out the principles of aseptic surgery. Bell (W. D.) N. Y. Med. J., 1898, lxviii, 830.

THE MILITARY SURGEON

A SUPPLEMENT TO THE

NATIONAL MEDICAL REVIEW

UNDER THE CHARGE OF

COLONEL WILLIAM H. FORWOOD,

Assistant Surgeon-General, United States Army.

VOL. I. WASHINGTON, D. C., JANUARY, 1899. NO. 11.

Original Articles.

AN ESSAY ON THE ORGANIZATION OF A MEDICAL DEPARTMENT FOR A VOLUNTEER ARMY OF 126,000 MEN ETC.

(Continued from December Number.)

BY COL. BENJAMIN F. POPE, SURGEON U. S. ARMY.

Transportation of the Sick and Wounded.

Ambulance Train.—To every Army Corps there will be a train of 150 two horse ambulances, 30 six mule wagons, 6 four horse wagons, 6 two horse wagons, 6 one horse carts for water. This train will be under the immediate charge of an officer of the Quartermaster's Department, with the rank of Captain, or in the absence of such officer, a Captain of the line, especially detailed by the Corps Commander. This officer, acting as Acting Quartermaster, will receipt and be responsible for all public property that may be issued to him, which will include the entire equipment of the train, except the medical and surgical supplies, for which the Senior Medical Officer, assigned to duty with the train, will be responsible. The Acting Assistant Quartermaster will attend to all replacements and repairs required to ambulances, wagons and harnesses; make timely requisitions to supply new vehicles or animals, in the place of those lost, destroyed or broken down in service. He will, under supervision of the Surgeon in charge, have direct control of all drivers and stable men, detailed from the Hospital Corps, or otherwise attached to the train. The train will be supplied with a traveling forge, one or more blacksmiths, one or more saddlers and an artificer and a complete outfit of tools for each of those workmen, to keep everything in good order and repair. The Medical Officer, detailed with the ambulance train, will be one whose rank is superior to that of the Assistant Quartermaster, and in all matters pertaining to the transportation of the sick and wounded, he will control and be responsible; receiving and carrying into effect, the orders of the Chief Surgeon of the Corps, who will have exclusive command of the whole train. He will also command all Medical Officers, Stewards and Hospital Corps men attached to the train in any capacity.

Sections.—The train will be divided into four sections of about 34 ambulances

each made as equal as possible in the number of vehicles and equipment. The remaining 14 being permanently attached. The fourth section will form a reserve and be held at the Corps Hospital. To each section will be assigned one Medical Officer, with the rank of 1st Lieutenant.

Medical Personnel.—The personnel of the train will be as follows: one Surgeon in command, six Assistant Surgeons attached, one Q. M. or Actg. Q. M., three Hospital Stewards, six Actg. Hospitals Stewards and to every ambulance one driver and one Private of the Hospital Corps as attendant, one driver of the Q. M. Dept. will be attached to each wagon; total 48. Total complement, 8 Officers, 357 enlisted men.

Control.—The Chief Medical Officer of each Army Corps, shall under the control of the Medical Director, of the Army of ——, have the direction and supervision of all the ambulance trains of both the Division and of the Corps reserve and of all the Officers and men attached thereto. It shall be the duty of the Medical Director of the Corps, previous to a march or before or during an action, to issue proper orders to the Medical Officer, in charge of the train, for collecting the sick and wounded and conveying them to their destination.

All available ambulances when needed —under direction of the Medical Director of the Corps—will be used, without reference to the Divisions to which they may be assigned, in transporting wounded to the Hospitals. The Corps Director gives the necessary orders to have all wagons, when employed, properly bedded with hay or brush, he will specify the number of rations, to be taken with the train, and the number of Medical Officers and Hospital Corps men that of the Bearer Companies should accompany detachments of the train, also giving instructions as to roads, places of camping, location of railway stations, etc. When the troops remain in camp for sometime, it will be convenient to have near each Division, a few ambulances, with horses hitched, ready to convey patients to the Division Hospital, these are to be known as the Corps picket ambulances. Their posts should be marked by a red cross guidon.

With this picket, will be a small detachment of Hospital Corps men and a Medical Officer, an Acting Hospital Steward, and one chest of medical supplies.

The picket ambulances are to be relieved every twelve hours.

During the Civil War, the number of ambulances was fixed on the following basis: To every regiment of Infantry, composing the division, there was allowed 3. To each regiment of Cavalry 3. To each Battery of Artillery 1, (permanently attached). To each Headquarters of the Army Corps 2.

To all Division, Brigades, and commands not attached, to any Army Corps, the allowance was upon the same basis. Under existing conditions, it is assumed that the Army Corps will have the following allowance. To 27 Regiments of infantry, 81 ambulances. To 8 Batteries of artillery, 8. To one Regiment of cavalry 3. To one Battalion of engineers, 2. To the Supply Train, 1. To the Division Hospitals, 48. Total, 143. To reserve Wagon Trains, 7. Grand total, 150.

Animals.

For ambulances 300 horses. For wagons, 72 mules. For wagon masters, etc., 2 horses. For Hospital Corps Orderlies and the mounted privates, with calvary

command, 33 horses: Total 335 horses, 72 mules.

The present equipment of every ambulance, is two litters, two water boxes, two lanterns, one wrench, one water bucket, one small axe or hatchet, one bundle of leather thongs for repair of harness, one paulin, which can be used to make a temporary shelter for the wounded.

The medical supplies will be as prescribed by the Surgeon General.

Room for a medical chest is also provided when required.

Railway Transportation for the Sick and Wounded.

The Chief Surgeon of the Army of ——, will have entire control of such railway transportation as may be required to transport the sick and wounded from the Division Hospital to the base or general hospitals. He will also have, under direction of the Surgeon General of the Army control of all hospital transports, and boats or barges for the conveyance of medical supplies, and subsistence stores for the sick and wounded. Each hospital train will consist of 14 cars. Those now known under the name of tourists sleepers, being selected in preference to the more elaborately upholstered Pullman sleeping cars, for the use of the sick and wounded. Each of these sleeping cars, will accommodate 24 patients, 12 grave cases occupying the lower berths and 12 lighter cases, or those sick only, the upper berths. A dining car will be placed at the rear of the train and a dispensary car, one half of which will be fitted up as a surgical operating room will be placed in the center of the train. Each train will have a baggage car, which will serve as a store room for supplies, and one car will be allotted to the Hospital Stewards and the members of the Medical Staff. All cars will be the latest pattern and known as the vestibule and arranged so that a litter or a patient can be carried from one end to the other of the train without obstruction. Every car will be thoroughly cleaned and disinfected before use and every car will have its tank of water for washing and for flushing the water closets. The linen closets will be stocked with bedding and comforts for the sick and every car will have a field commode chest, which should contain all necessary requisites for nursing. The Surgery will be equipped with an operating table, two steam sterilizers, a gas or oil stove for heating same, a surgical and a medical chest and a reserve supply of surgical dressings and appliances. There will be a field desk for the Steward and another for the Medical Officer. The dining car will be equipped with a cooking range and the requisite outfit for feeding at least three hundred patients.

Personnel.—Every train will be under the command of a medical officer, with the rank of Major, U. S. Vol. Med. Dept.; with him will be two assistant surgeons of the same department. The officer in charge will receive his orders from the Chief Medical Officer of the Army of ——, and from him alone; he will receipt for all government property issued to him and be responsible for the same. The train crew with its engineer, fireman, brakemen and conductor, will while on duty be under control of the medical department, so far as the general operations of Military trains and railways will permit; the exact limits of this control can hardly be defined in advance of actual conditions. As cooks, nurses, attendants and litter bearers, there will be assigned a detachment of the Hospital Corps as follows, one Hos-

pital Steward, two Acting Hospital Stewards, ——— Privates, one cook, one assistant cook, one nurse for each car, one attendant for the dispensary, one attendant for the surgery. (Total 14). To each train there will be furnished four litters, for carrying patients, and two roller chairs.

Number of Trains.—The total capacity of each train will ordinarily be 240 patients; while this can be increased, by adding a greater number of cars, or placing two patients in some berths it is believed that twelve cars will be about the maximum that can be loaded or unloaded within a reasonable time.

At the point of reception, the train should be opened from end to end, the bearers of the corps hospital, assisting the train bearers to load the cars. The bearers will carry their patients in by the rear platform, to which a staging should be laid; they will pass through to the front car and when the line of loaded litters fills the train, they should be unloaded, the patients put into the berths by the bearers, and the empty litters passed out by the front platform. In passing through the cars, with empty litters, they will always be folded. The upper berths will be loaded first, with the less serious cases, the lower ones being reserved for the graver cases.

While the absolute number of vestibuled trains must necessarily be determined by the number of sick and wounded, I think it would be proper to equip one train for each general hospital established and that as far as practicable its operation should be confined to regions, held by an Army Corps. A reserve train being held to assist the corps most heavily burdened with the wounded.

These trains should not be merely extemporized as occasions arise but be established at the earliest possible moment and form a permanent part of the equipment of the Medical Department.

Hospital Steamers.

Under direction of the Secretary of War the Quartermasters Department will provide at least two hospital steamers: one of 5000 tons burden, and one of 900 tons. These steamers which will probably be obtained by charter, will be fitted up as floating hospitals, and be used exclusively for that purpose.

The first steamer should have accommodations for at least 1000 patients. It should be provided by the Medical Department, under the direction of the Chief Surgeon of the Army of ——, with 1100 folding cots, each complete with blankets, sheets, pillow cases, pillows, linen quilts and all the nursing appliances for the hospital of that number of beds.

Its complement of Medical Officers and members of the Hospital Corps, should be about the same as for a division hospital. One Major of the U. S. A. Medical Department in command.

For assistants, there should be detailed one Captain from the same department, as Executive Officer in charge of records etc. One 1st Lieut. in charge of Subsistence and Medical stores. The Professional Staff of the hospital boat should consist of the Surgeons of U. S. Volunteers as operators and to each operator at least three assistants making eleven Medical officers in all.

Of enlisted men of the Volunteer Hospital Corps, there should be three Hospital Stewards, six acting Hospital Stewards, and from 60 to 100 privates whose duties would be exclusively with the boats as nurses, attendants and cooks, etc. The duties of these should be assigned by the Surgeon in command.

These Hospital boats should be under the immediate control of the Medical Director of the Army of ——. They could probably be secured by charter from among the great passenger steamers now floating upon the lakes. A steamer without staterooms would be preferable as they would materially interfere with proper ventilation, and limit the available floor space. Both upper and lower decks, should be utilized, when practicable.

A complete outfit of surgical tables, sterilizers, instruments, dressings and stores should be supplied as for a Division Hospital.

A cooks' galley, with an abundant supply of soup caldrons, and arrangements for cooking special diets for the sick should be provided. Large refrigerators and liberal supplies of ice, and drinking water are also necessary.

The exact arrangement of the wards etc., can hardly be stated in advance as they must conform to the general plan of the boat.

The smaller steamer should be flat bottomed and of light draught to permit its entrance into shallow bays and rivers, with arrangements for landing without the aid of docks, as is now found on steamers navigating the Ohio river.

It should be equipped as a hospital of 250 beds, with a proportionate complement of Medical Officers, men and supplies.

Medical Purveying.

Purchase of Supplies. Depots of Supplies. Where Located and How Administered.

Medical and Surgical. The purchase of supplies for the Army will hardly be delegated to the Chief Surgeon of the Army of ——. These are ordinarily purchased by the Surgeon General, after due advertisement and, under formal contract. The purchase of supplies, cots and bedding, blankets etc., would be an easy matter. Good woven wire folding cots with wooden frames, could be purchased in open market, for about $1.35 each. Cotton mattresses at $1.40, cotton sheets at 24½c., pillow cases at 9c. blankets at $2.83, and colored quilts for about 60c.

The necessary basins, buckets, lanterns and kitchen ware are all commodities of ordinary commerce which could be delivered in any desired lots, at any point within the state.

The purchase of tentage, ambulances, and wagons would be within the province of the Quartermaster General, and would be obtained from him on requisition.

Drugs and surgical dressings would be largely procured without the state.

For the Volunteer Medical Officers of the Army, the requisite surgical instruments would either be furnished under contract by the Medical Department or the officers might be required to take their own instruments to the field.

One thousand hospital corps pouches could probably be furnished in sixty days but of that I am not sure. Extemporized pouches might be temporarily provided, a pattern being furnished to each regiment, which could be easily copied by any one

The distribution of supplies after their receipt, would be under the control of the Chief Surgeon of the Army of ——.

He would under the direction of the Surgeon General, establish one Medical Depot at ————, and sub-depots as near the center of military operations as circumstances will permit.

Army Corps Supplies.

For the supply of Army Corps, my preference would be for the charter of trains of cars to be fitted up as sub-depots and store houses. These trains could be

side tracked near railroad stations of the army corps or wherever needed, and issues made directly from them to the several corps and division hospitals and brigade medicine wagons: when supplies are exhausted certain cars could be cut out and run back to the central medical depot, there restocked and again sent to the front. Every car should be marked U. S. Medical Department, Hospital Supplies, "rush" and its point of delivery and a general schedule of contents plainly lettered on the outside of the car.

Personnel.—The Medical Supply Depot should be under the charge a Lieut. Col. of the Medical Department, U. S. Army. He should be provided with a chief clerk, three tally clerks and about forty packers and laborers, to handle the supplies. Contract for furnishing all the boxing required, could be let in this city, at reasonable rates. The medical supply trains should also be under charge of a Medical Officer of the U. S. Army, with whom should be assigned one Hospital Steward, two Acting Hospital Stewards and ten Hospital Corps Privates, as packers, laborers and guards. The motive power of the train and its crew would be under charge of the Quartermasters Department of the Army.

The best style of car for this service, would be what is known as the express or possibly the postal car. Failing in these, emigrant cars could be fitted up for that purpose, the seats being removed and side doors cut: ordinary freight cars would not be suitable as there would be no means of access to them except from the outside of the train.

Medicine Wagons.

It is an open question, what style of medicine wagon should be adopted. There are none now in service and those used during the war had many drawbacks, which led to their abandonment. It is my belief that if the present medical and surgical chests could be supplied in sufficient numbers, they would be better adapted to the needs of the service than any distinctive medicine wagon.

In certain surgical appliances the chests are lacking, such as a sufficient number of splints, cloth dressing, and bandages, for a very large number of gunshot fractures and other grave wounds; but these could be furnished in separate packages, in any quantity desired, and then distribution would be a matter of little difficulty.

One medicine wagon, of whatever design adopted, should be assigned to every Brigade, so that the field chests of the Regimental Medical Officers could be readily restocked, surplus hospital corps pouches and requisite supplies for the same should be carried.

It is intended that these traveling store distributors shall be rapidly refilled at the corps medical railway train, and sent to the front as needed. A few surplus wagons being kept on hand, ready packed, to take the place of the empty ones returning.

These wagons should form a part of the ambulance train and be directly under control of the Chief Surgeon of the Corps.

Attached to each wagon, should be a Hospital Steward, who would receive and issue the supplies, and if required fill the emergency prescriptions of Medical Officers at Brigade Headquarters.

Convalescent Camps.

An essential adjunct to the hospital system of the Army would be the formation of a number of convalescent camps, to which could be sent all officers and soldiers discharged from treatment as fit for service.

All of these camps should be under the control of the Provost Marshal of

the Army; a Lieutenant-Colonel or officer of lesser rank in command with a sufficient number of officers and men to keep the camp in order.

A Captain of the Quartermaster's Department should be in charge of all transportation requests, and the convalescents under charge of suitable guards be forwarded in parties to their several Commands. During the Civil War Medical Inspectors were delegated to prepare certificates of disability for discharge in all cases where such action was required and they were given authority to formally complete such discharges from service without reference to higher authority.

Whether the same system will best meet existing or assumed conditions I shall not here discuss.

Burial of the Dead.

This final and sad disposal of our patriotic soldier under present regulation is wholly under the control of the Quartermaster's Department, as is also the registration of graves and the care of cemeteries. The identification of the dead is among the duties of the Medical Officer, especially at all military hospitals, in order that the death record may be properly prepared. The identification of dead upon the field of battle, by examination of all bodies found, and the registration on outline cards of all scars and marks discovered, has been proposed by certain enthusiastic admirers of this system; but in the hurry of an active campaign any such attempt would result in flat failure; and any one who has had adequate experience in the preparation of these cards in large numbers, as a part of the enlistment service of the Army will be willing to support the statement.

The German method of fastening about the neck of every soldier a brass tag which bears a consecutive number of an indefinite series is much more simple and absolutely certain unless a soldier loses or trades his tag. Such substitution however in the few instances in which it might occur, could easily be recognized and corrected at any company inspection.

Remarks.

The limits of this paper prevent me from referring to several important and interesting matters which at some future time can be treated in detail. These would comprise an enumeration of the specific duties of the several officers of the Medical Department from the Surgeon-in-Chief of the Army down to that of a junior assistant attached to a regiment; also all the several duties of the Non-Commissioned Officers of the Hospital Corps: a description of reports and returns which would be required, the preparation of requisitions for supplies, methods of purchase both by advertisement and subsequent contract or in open market; the specific nature of the supplies that will be required for field and permanent hospitals; the utilization of private vehicles for transportation of the wounded in the probable absence of a sufficient number of regulation ambulances; the character of those best adapted for that purpose, where they can be procured, whether by purchase or hire; the establishment of dressing stations on the field of battle, their lines and methods of communication with the field hospitals and the fighting line. The best methods for the care of the wounded who must be left on the ground where they fall; the advisability of litter carriage under heavy fire from the enemy and how it can be best accomplished.

All of these and many other subjects germane to that under consideration be must postponed.

Selections.

Higher Medical Education and a Plea for Better Training of the Volunteer Medical Officer.*

Perhaps no subject just now is of greater interest to the profession and the public, than the training of medical men as future medical officers of the army. Perhaps few men will question that military surgery and sanitation should have a place in the medical college curriculum. Those who are in doubt will simply have to recall our experience in past wars and consider the probabilities of the future.

In the Crimean War, the French army lost one man out of three of the whole army, and of 95,613 lives lost, only 10,240 were killed, about as many died of wounds, while the remainder, more than 75,000, died of disease.

The total deaths in the Union army during our Civil War, numbered 259,496, or over 15 per cent. of the entire number of enlistments. Of this number, 124,586, or nearly one-half, died from disease, while 134,910 were killed in battle or died from the effects of wounds. Indeed, it is calculated that in that war the Union army treated over six million cases, including 151,384 cases of continued fever, mostly typhoid, 1,739,135 cases of diarrhœa and dysentery, 76,318 cases of measles, 18,952 cases of small pox, and 24,812 cases of erysipelas.

"What an excess of pain and sorrow; what an ocean of tears and blood are contained in these figures!"

Consider, if you please, that in addition to this terrible sacrifice of human life, a generous nation expends $140,000,000 a year for the support of invalids of this war.

In spite of this array of preventable diseases, Prof. Virchow, the highest medical authority in Germany, in reviewing the medical history of that war, said: "That the French in the Crimea learned from their experience little or nothing, and the Americans during the Civil War so much, was not due to the magnitude of the need which the Americans had to suffer; for this was not greater than that experienced by the French in the Crimea, but rather to the critical and truly scientific spirit, the open mind, the sound and practical common sense which in America gradually permeated all departments of army organization, and which, under the wonderful co-operation of an entire nation, reached the highest point of humane effort ever attained in a great war."

From this time dates a new era in military medicine, and the knowledge purchased at so vast an expense, has had a beneficial influence upon other armies and borne fruit in our recent brief but glorious war; for, notwithstanding the most unjust criticism of the press, the work of the medical department of the army, in the face of adverse climatic conditions, shows a marked improvement over that performed heretofore.

We ought not to judge the efficiency of the medical corps by a few isolated cases of suffering and distress incident to the exigencies of war; but should estimate the work by the grand total accomplished.

The War Department, on October 4th, posted a bulletin showing the number of deaths from all causes between May 1st and September 30th, to have been as follows:

Killed, 23 officers and 257 enlisted men; died of wounds, 4 officers and 61 enlisted men; died of disease, 80 officers and 2,485 enlisted men—being an aggregate of 2,910 out of a total force of 274,777 officers and enlisted men, or a percentage of 1.59.

In estimating these percentages due allowance should, of course, be made for the comparative short duration of the recent war; and reliable conclusions can only be drawn by comparing the statistics of the first six months of our Civil War with the corresponding period of the Spanish-American war. This, at present, is not practicable; but we do know that among 20,000 troops stationed at Camp Alger, Va., at the close of the second month of its recent occupancy, there were only 39 cases of typhoid fever, while at the corresponding period of 1861

*Read at the Decennial Anniversary of the Medical and Surgical Society of the District of Columbia, October 31, 1898.

the same number of troops near Washington furnished 166 cases.*

When it is remembered that the largest percentage of sickness and mortality generally occurs during the first few months of a war, because large numbers of unseasoned troops are aggregated in military camps, and their very ages, from 18 to 30, together with a radical change in the mode of living, renders them especially liable to typhoid fever infection, we may confidently expect that future comparisons with troops exposed to similar influences will show that the medical corps has kept pace with the progress of preventive medicine. Indeed, the medical statistics so far at hand clearly demonstrate its success in diminishing the horrors of war.

All this is more creditable, when we consider that the United States with a small standing army and a small corps of trained medical officers, was suddenly involved in war, absolutely unprepared for the struggle, except that we had men gifted with good common sense, powers of observation and application, and a generous nation to provide the necessary means.

If the American medical staff accomplished so much without special training, how much more might have been achieved had the volunteer medical officers enjoyed instructions in military surgery and sanitation, such as is given in the Army Medical School, in this city, established by Surgeon-General Sternberg, five years ago, as one of his first official acts.

Some one will say, "Necessity is the mother of invention. Experience is the best teacher. We did it before, and we can do again." Yes ; but who can deny that had the medical officers of our wars known more of army diseases, their causes and prevention, had they appreciated the importance of military sanitation and the routine of their official duties, the results, creditable as they are, would have been still more satisfactory?

It is true the volunteer medical officer is perfectly familiar with surgery and medicine, their practice from civil life does not differ, save in the circumstances which surround them; but it is not so with his official and sanitary duties, and, as well expressed by a competent critic, "the difficulties encountered by the army medical department were due to the impossibility of having in so short a time an experienced and well disciplined medical force sufficiently strong in numbers to control the sanitary situation in an aggregation of a quarter of a million of men, hurriedly thrown together in military camps."

Our army certainly needs reorganization; instead, however, of attacking a faulty system for which the people or their representatives in Congress are largely to blame the present chief of the Army Medical Department has been made a target for most unjust criticism.

He appears to be held responsible for the care of every individual sick, for the sanitary condition of camps, for the misdeeds of his subordinates, for the failure of the Quartermaster's Department to land medical supplies, etc.; but this earnest, hard-working officer needs no vindication at my hands. History will do this when the facts are known, and the facts already developed reflect the highest credit upon his administration.

His circular of April 25th, four days after the declaration of war, in which he urged on medical and commanding officers the importance of sanitary precautions for the prevention of disease in camps, has alone saved thousands of lives, as judged by the experience of former wars.

The question naturally arises, What can be done to secure an experienced sanitary corps of medical officers in the event of future wars? And the answer must be, we should either have a large standing army, fully trained and equipped for any and every emergency, or provide this special training in some other way.

One of our Presidents has said, that "under our system of government we will never have a large standing army,

*Since the address was delivered Deputy Surgeon General Charles Smart U. S. Army in a letter to the Surgeon General reports that during the Civil War there were 17.31 deaths out of every thousand men during the five months from July to November 1861, as compared with 10.21 deaths per 1,000 for the five months from May to September 1898.

and our strength and safety are in a general dissemination of military knowledge among the people." This advice has been acted upon by numerous educational institutions, teaching the coming men of America the elements of the art of war; but so far scarcely any of our medical colleges have deemed it necessary to teach their students the duties of medical officers. It is true the National Guards afford an opportunity for this training, but even if all the medical officers of the State troops were on the high plane of efficiency that a few have attained, they could not fill the demand of those needed in a war of any proportion, requiring one medical officer for every 200 fighting men ; and we should, therefore, look to our medical schools for a systematic diffusion of military sanitation.

Our medical colleges have very generally introduced instruction in personal and public hygiene; and there should be no difficulty in convincing them that it is a patriotic duty to establish a course on military surgery and sanitation.

As a matter of fact, one of the medical schools in this city established such a course in 1894; and it is believed that interest in the general course on hygiene has been promoted thereby.

It is no more difficult to interest the average student in this than in any of the subjects taught, provided the course is made obligatory and he is required to pass a satisfactory examination. This is sufficient to insure prompt attendance and attention; but apart from this we can appeal to the patriotism and ambition of the student.

It cannot be expected that every young physician will or can choose the army or other public services for his professional career; but there will be ample opportunities for the application of the knowledge thus acquired as sanitary officers in connection with health boards, as physicians and surgeons in charge of hospitals, reform schools, jails, prisons, asylums, ship and police surgeons, pension examiners, surgeons in the employ of railroads and mining companies, surveying expeditions, medical examiners of insurance companies, and in the home of almost every patient.

When a student is told, for example, that the general rules to be observed in the examination of recruits will enable him to select able-bodied men for the police force and life insurance policies; and that the question of food, its preparation and the care of cooking utensils are of practical importance in the management of his patients, his interest in these subjects will be stimulated. Indeed, he will soon learn that the aphorisms of the army cook's creed are not less applicable to the civilian. Take, for instance, the following, the truth of which the soldier learned from bitter experience:

"Cleanliness is next to godliness both in person and kettles It is less dangerous to work your elbows than your comrade's bowels. Remember, that beans badly boiled kill more than bullets, and too much grease is more fatal than powder."

The average student of to-day will not forget the import of these aphorisms, and takes pride in being able to explain that dirty and greasy pots furnish food for certain saprophytic germs and consequent toxic products, which in turn produce cholera morbus and other gastro-enteric disorders. That an excess of grease and improperly cooked beans render the digestive tract vulnerable to the germs of typhoid fever and dysentery, and are, to a great extent, responsible for the many cases of simple and chronic diarrhœa. He will also appreciate the necessity of a prompt and correct diagnosis and proper disinfection, in order to limit the spread of typhoid fever and other infectious diseases, and will scarcely forget that good wholesome food and personal hygiene secure pure blood, which offers the best possible defence against microbial invaders.

The lectures on Military Hygiene and Surgery may very properly be devoted to the following subjects:

1. The national necessity of instruction in military surgery and sanitation.
2. The duties of medical officers, professional and administrative.
3. The duties of medical officers as sanitary officers.
4. The importance of examination of recruits and discharges on surgeons' certificates.

5. The training of hospital corps.

6. The hygiene of troops in permanent posts.

7. The hygiene of troops upon the march and in camps.

8. Preparation and field supplies for field service and active hostilities.

9. Modern fire-arms, explosives and projectiles.

10. The effects of modern fire-arms, in battle and probable amount of surgical work in a given number of wounded.

11. General consideration of gunshot, sabre, and bayonet wounds.

12. Dressing stations, field, base and general hospital.

13. Army diseases, their causes and prevention.

In order to supplement theoretical instruction by practical experience, legislation should be invoked to enable respectable Medical colleges to recommend to the Surgeon-General a certain number of qualified students for admission to the Army Medical School. Upon completion of their course, those passing the most creditable examination might be chosen to fill vacancies in the regular corps, while, the remainder should be appointed additional assistant surgeons for a term of two years, at the expiration of which they should return to civil life, obligated to render service whenever the exigencies of war require it.

The advantage of this plan, apart from supplying the public service with superior talent, would be the creation of a strong reserve, whose special training would be invaluable, not only to State troops, but to the nation, in peace as well as in war. George M. Kober, Washington, D. C., Virginia Medical Semi-Monthly, Richmond, Dec. 9, 1898, p. 503.

Typhoid Fever Among Soldiers.

We have heard so much of late about the number of needless and preventable deaths from typhoid occurring among our soldiers during the recent war that it is both interesting and instructive to learn the conditions obtaining in other armies far more favorably situated in every respect, from their settled organization, to cope against disease than was our hastily raised and equipped expeditionary force. It would appear from the Lancet for October 29th that typhoid fever has broken out with considerable virulence even among the admirably organized and administered troops of General Kitchener in the Soudan campaign. The Cairo correspondent of the British Medical Journal for October 29th says that "there are about four deaths in the hospital every day from enteric. Numbers have the disease, both officers and men." We further learn that of the regiments which have returned to England one hundred and sixty men are in hospital, about thirty of the cases being typhoid, while the majority of the remainder are diseases of the digestive organs. The typhoid cases are said to be of a serious character, giving anxiety. The Lancet points out that this result was only what was to be expected in accordance with England's previous experience in connection with campaigns in tropical and subtropical climates, and with that of similar expeditions conducted by every other nation. "It is, unfortunately, always the case," says the Lancet, "that an army in the field suffers far more from sickness than from the assaults of the enemy to which it is opposed"; but it goes on to remark that although losses from sickness are practically unavoidable under such circumstances, still it must not be forgotten that their amount is very sensibly lessened in proportion to the forethought and care bestowed on perfecting the hygienic and medical arrangements in the field. As in the case of this country, the prevalence of typhoid among the English forces is attributed to the fact that the use of unwholesome and contaminated water by troops can not be entirely prevented; while the character of the rations, also inevitable on active service, comes in for its share of the blame as a predisposing element, together with the hardships and fatigue necessarily incident to campaigning. The latter factors lower the general vital resistance, which, as the British Medical Journal states, is shown to be least in the case of the younger and short-service soldiers; while the former exert their special deranging influence upon the very part of the economy attacked by typhoid—namely, the alimentary canal. The Lancet says that the time for the disease toll to be exacted comes when the physical wear and tear and the excitement and strain of the

nervous system have abated or passed away.

Although we must admit that our results have been very serious, we can not help taking note of the facts that England has a marked advantage in the question of military experience, owing to its being nearly always at war, small or great, somewhere on the face of the globe, which fact naturally tends toward the perfection of its organization to meet the conditions of warfare; while the United States, on the other hand, was undoubtedly at an enormous disadvantage from the fact that the major portion of its army consisted of those same younger and short-service soldiers who, as we have seen, are the least able to offer successful resistance to the onslaughts of disease. N. Y. Med. J., 1898, lxviii, 742.

Experiences at the Various Hospitals in the Diagnosis and Treatment of the Diseases Prevalent in the Army.

Vickery considers some 90 cases at the Massachusetts General Hospital. Nearly all the cases had malaria, and in those without symptoms to whom no quinin was given the disease usually developed before leaving the hospital. Jackson had under observation 126 soldiers in the Boston City Hospital; 65 suffered from malaria; with 2 deaths. The cases of malaria are divided into four types: those with a temperature of 101° upon admission; those of remittent type, with a subtype of remittent fevers in which the temperature was long continued: those of intermittent type, although none of the cases showed the typical temperature charts found in ordinary malaria; and, finally, those of pernicious type, one case of which at least was complicated by pneumonia. The organisms usually found were the fine intracorpuscular hyaline bodies and crescents; occasionally a few intracorpuscular pigmented organisms. Quinin was the most efficient drug. Minot noticed at the Long Island Hospital the same types of malaria that Jackson had described. Quinin did not seem to have had much influence upon the temperature, no matter by what method it was given. Hewes treated 88 cases at the Carney Hospital. Of these, 80 had malaria, 7 complicated with typhoid. In all, plasmodia were found. Of the 80 cases 60 were estivo autumnal, 6 were tertian, and 6 mixed. A great variety of the forms of the parasite were found. A comparison of the temperature-charts indicates that the only satisfactory method of making the differential diagnosis is with the microscope. In one case, malaria was associated with acute jaundice, in another with acute nephritis; both patients recovered under vigorous dosing with quinin. Vickery(H. F.), H. Jackson, J. J. Minot, H. F. Hewes. Boston, M and S. J., Dec. 8, 1898[Phila. M. J., 1898, ii, 1291.]

Sawdust Urinals.

In our issue for October 1st we quoted from the Lancet for September 6th a portion of a letter advocating sawdust urinals. The British Medical Journal for November 19th comments on a letter in its columns from Lieutenant-Colonel Mayne, of the Indian Medical Staff, as follows: "The opportunities afforded of testing an arrangement of this kind in an Indian military camp enable Colonel Mayne to speak with some authority. Excellent filters for the lines seem to have been made of half barrels. A paraffin tin was placed under each of these tubs, and the liquid which filtered through the sawdust in the barrel fell into the tin and was removed. It was odorless and inoffensive. The upper layer of sawdust is better removed from time to time. One great advantage of the sawdust conservancy system is the lessening of the fly nuisance. The working expense is also fortunately slight. In providing in this country for the large number of ladies brought together lately at a great musical festival lasting over several days, temporary conveniences were run up of an exceedingly simple character in an easily accessible, open, but walled-in portion of the premises. A few wooden partitions were curtained off. In each cabinet an ordinary seat, similar to those of pedestal closets, rested on brackets, and beneath was placed a small portable pail filled with sawdust. These pails were changed as soon as the audience had quitted the building. During the whole time, notwithstanding the close, muggy weather which prevailed, every cabinet is said to have been

perfectly sweet. Such a method commends itself at once as a valuable addition to the sanitary measures needed in our camps, and we think that its adoption would be a wise move. N. Y. Med. J., 1898, lxviii, 892.

Martini-Henry and Lee-Metford Bullets.

In a comparison of gunshot-wounds, treated at the General Hospital at Rawal Pindi, it was found that the Martini-Henry bullets lodged in the tissues much more frequently than the Lee-Medford, and much more deeply than round balls. Consequently the former were much more difficult to find, and also much more difficult to extract, partly in consequence of there being more deformed, more jagged and flattened. Owing to the Martini-Henry bullets being more deeply lodged there was a greater tendency for them to shift their position, and to wander in the planes of the deep muscles and intermuscular septa. The Rœntgen-ray apparatus proved of the greatest use in localizing the site and in confirming the presence or absence of bullets in the tissues. Phila. M. J., 1898, ii, 1115.

Correspondence.

Reorganization of the Army Medical Department.

1819 Q Street N. W.,
Washington, D. C.,
January 11, 1899.

Dear Sir :—Permit me to call attention to what appears to me a great injustice to the medical profession at large and the members of the Medical Corps of the U. S. Army in particular.

Section 11 of House Bill No. 11022 (a Bill for the reorganization of the Army) provides: "That the Medical Department shall consist of 1 Surgeon General with the rank of brigadier-general; 10 surgeons, with the rank of colonel; 20 surgeons with the rank of lieutenant-colonel, 110 surgeons with the rank of major; 360 assistant surgeons with the rank of captain or first lieutenant." * *

Upon comparing this section with the provisions made for the increase of other Staff Corps, it will be found, that only 2 per cent of the personnel of the Medical Corps will have the rank and pay of colonels, while 8.3 per cent of the other Staff Officers, such as Assistant Adjutant Generals, Inspectors, Judge-Advocates, Quartermasters, Commissary Officers, Paymasters and Officers of the Engineer, Ordnance and Signal Corps, will have the rank and pay of Colonel. The discrimination against members of a learned profession is so apparent, that every effort should be made to prevent the enactment of an injustice. The facts are, that Candidates for admission to the regular Army Medical Corps, after spending thousands of dollars upon their education, are only appointed after a most rigid examination into their moral, physical and professional qualifications, while the majority of the officers of other Staff Corps have been educated at West Point at the expense of the Government. Should this bill become a law, it must be apparent, that very few Medical Officers even after 40 years of faithful service can hope to attain the rank of a colonel, with an income equivalent to about $4,500 per annum.

Without detracting from the merits of other Staff Corps, it does not seem just or fair, to give preference to men, who conduct the correspondence and supply the Army with food, clothing, quarters, transportation, guns and amunition or to pay the troops, over men who are charged with the highest professional duties in life.

The writer can only hope that this discrimination against the Medical Corps is wholly inadvertent, but if it be the result of prejudice, created by the criticism of a sensational press, I trust for the sake of the fair name of American Medicine, that such unjust impressions are promptly corrected.

The Army Medical Department during the recent Spanish-American war, has in no way disappointed the expectations of competent critics and in every sense

maintained the proud distinction accorded to the Medical Staff of the Civil War, by Professor Virchow, in an oration delivered before the Army Medical School at Berlin in 1874.

The facts to substantiate this assertion are briefly as follows, and should be emphasized whenever occasion demands it.

During the Crimean war according to Prof. Virchow the French Army lost one man out of three of the whole Army and of 95,613 lives lost only 10,240 were killed, about as many died of wounds, while the remainder more than 75,000 died of disease.

During the Civil War the total deaths in the Union Army numbered 359,496 or over 15 per cent of the entire number of enlistments: Of this number 224,586 or nearly 2-3 died from disease, while only 134,910 were killed in battle or died from wounds. Up to the present time our losses during the Spanish-American War are less than 2 per cent. Due allowance should of course be made for the compartative short duration of the recent war, but Deputy Surgeon-General Smart in comparing the mortality during the first five months of the two wars, finds that there were 17.31 deaths out of every 1,000 men during the Civil War and only 10.21 deaths out of every 1000 men, during the Spanish-American War.

Attempts have been made by a prejudiced press to institute comparisons to our disadvantage between the labors of the U. S. Army Medical Department and those of the British Medical Service in India and the Soudan, but even here, careful analysis of the facts reflects the highest credit upon the intelligence, zeal and success of the American Medical Corps, for the writer of an editorial in the Journal of the American Medical Association Dec. 10, 1898 based upon an English official report informs us, that from June 19, 1897 to April 6, 1898 among the troops engaged with the hostile tribes in India, aggregating 18,688 British Officers and men, 41,677 native officers and men and 32.696 followers or a total of 93,061 there were 41,055 men admitted to sick report and 1602 deaths or a rate of 17.20 per thousand of the strength. Speaking of the successful Soudan Campaign under Sir Herbert Kitchener, the Editorial quotes from the British Medical Journal of October 22 that sickness has been fearful among the English Soudan troops "although the papers save the Chronicle say little or nothing about it" and the issue of October 29 refers to the fact that since the return of the 1st Battalion of the Grenadier Guards to England typhoid cases have been abundant; 160 men altogether, were in the hospital, many of them well marked typhoid cases. "Assuming" the writer continues "that the battalion comprised some 800 to 1000 men—rather less than more after a campaign—this would make a formidable percentage, fully equalling that of some of our green volunteer regiments on their return from Cuba, where they had the special disorders of malaria and yellow fever also to combat. On the basis of these statements it would appear probable that typhoid fever was even a greater scourge to the British troops in the Soudan than to our own forces in the training camps and the West Indies."

The writer presents these facts with gratification, as they confirm the conclusions of unbiased observers, that no nation on the face of the globe can boast of a more efficient corps of medical officers, than our own, and again expresses the hope that every physician in this city will write or speak to some Senator or Representative and thus prevent a most unjust discrimination against Members of our own Profession. The following gentlemen are Members of the Committee on Military Affairs: Messrs Hawley, Proctor, Shoup, Sewell, Warren, Carter, Bate, Cockrell, Mitchell and Pettus in the U. S. Senate and Messrs Hull, Marsh, Griffin, Ketcham, Fenton, Mahany, Belknap, McDonald, Brownlow, Sulzer, Martin, Cox, Lentz, Hay, Jett and Smith of the House of Representatives.

Yours Respectfully,

Geo. M. Kober.

THE MILITARY SURGEON

A SUPPLEMENT TO THE

NATIONAL MEDICAL REVIEW

VOL. I. WASHINGTON, D. C., FEBRUARY, 1899. NO. 12.

Correspondence.

1443 MICHIGAN AVE.,
Chicago, Ill., Oct. 10, 1898.

BRIG. GENERAL GEO. M. STERNBERG,
Surgeon General, U. S. A.,
Washington, D. C.

DEAR GENERAL:—In accordance with your letter of suggestion with reference to experimenting with a certain bicycle-ambulance, constructed by myself, with a view of determining its practicability as a vehicle for transporting the sick or wounded or injured on the battle-field, on the march or in garrison, I beg leave to submit the following report:

The idea of utilizing the bicycle thus is not original with me. As you doubtless have seen, descriptions of a variety of so-called cycle-ambulances, on three, four and five wheels respectively, have repeatedly appeared in medical journals and the secular press. Not one of them, however, has proved a success or enjoyed more than an experimental use.

The fact that many European military authorities have decided to adopt the bicycle as a means of transportation of messengers and members of the Signal corps, and that a movement is on foot to mount regiments of infantry on wheels, has lead me to the belief that the bicycle could be used also by the medical department. My experiment recently completed have confirmed me in this conviction.

Two good bicycles, standing parallel to each other can be coupled together so as to permit the fastening of a litter upon the coupling frame. Hitherto, the stubborn obstacle has been the rigidity of the coupler. But the one treated of here is absolutely flexible. Nor can a novice begin to imagine the intricacy of such a contrivance. More than a score of clamps, springs and cushioned protections have grown to be necessary in the gradual perfecting of this machine. I particularize on this point because in the complete flexibility, or otherwise, of this device depends its success or failure. For the rigid coupler admits heavy jarring on uneven roads, easily allowing the whole machine to be overturned, and invariably tearing the wheels themselves to pieces. The coupler shown perfectly obviates all these difficulties.

On the same principle any size desired can be constructed. The most convenient size, of course, is such as will track with the ordinary wagon. This is commodious. Nor will it be too heavy if as many parts as possible are made with aluminum. On this two bodies and if necessary three, can be easily and swiftly carried. For there was no trouble found in carrying two on the narrow attachment illustrated in the cut.

The device can be detatched from the wheel in one minute and attached again in three minutes, thus leaving the wheels free for any other use desired. The coupler folds into the smallest possible space, a part of it being attached to each wheel if desired.

Men, who work this ambulance are always present, while horses are not al-

ways at hand. Men have reason and will work, while horses sometimes balk, and thus greatly delay the work. It requires more men to handle the horses than to do the whole work with this ambulance. And horses often destroy more lives than they save on the battlefield.

A lower deck, made sufficiently narrow to escape the pedals freely, or drawers under this upper deck, can be used for medicines, bandages, and other items of an ambulance outfit.

Too much care cannot be paid to the wheels used, for the wheel is the base of this whole affair. On this point we can only give our experience in the most straightforward way: the chain must be eliminated from the wheel used for army purposes. There is no time or opportunity for mending, cleaning or doping chains. The catching in them of clothes, weeds, grass and other articles cannot be hazarded. Nor can we afford to waste the force incident to the slacking and taking up of the slack in the chain, each additional ease of propelling being of the greatest importance. Hence, after careful and long investigation and experiment we concluded that the Columbia Bevel Gear Chainless bicycle was the safest to use. Its superior smoothness was at once apparent to us. We found the use of chain-driven machines compared to the chainless not a comparison but a contrast. So, Dr. W. W. Fellows of this city and in company with whom these experiments were made, and myself, at once purchased two Columbia chainless wheels. And right glad we were before we got through that we had taken nothing less safe. For they withstood absolutely the jar and wrench and lurching of the most severe experiments.

Before starting on our experimental trip I examined Dr. Fellows carefully, and found his heart, lungs, kidneys, and rectum normal. I had been examined some two months before and was pronounced to have no organic trouble. I had myself examined my urine, finding no sugar or albumen. Some earthy phosphates were detected, but this is not unusual in my case after an undue excitement or worry. Dr. Fellows weighed 196 pounds, at a height of five feet eight inches; and I 135, at a height of five feet four inches. We are not expert riders, using the bicycle only in good weather and for professional and pleasure trips about the city. And yet, although the weather was the hottest of the season and much of the way lumpy and bumpy, Dr. Fellows lost but four pounds, and I but three. The route embraced every variety of roads—from the asphalt boulevards to the rocky and hilly country roads and meadows and prairies.

We started from my house in Chicago at 7 o'clock in the forenoon, September 1st, and arrived in St. Louis, September 5th, at 4 p m., Dr. Fellows' cyclometer registering 323.7 miles, and mine 329.8. The difference is accounted for by my visit to the Home of the Soldiers' Widows near Wilmington, Ill., and to Camp Lincoln, at Springfield, paying my respects there to Captain C. Craig, commanding Battery B., I. N. G.

I regret being unable to give the exact record of the mercury during every day of the trip. We went prepared to do this, but our theremonter was broken early. But the intelligent people in the towns we passed through reported the maximum heat at a hundred degrees F. This excessive heat greatly inconvenienced us; and yet, save a thorough tanning and some pecling off of the epidermis, we suffered little ill consequences.

I beg also to say that we wore suits made of the regulation material in order to come as near as possible to the equipment of the actual soldier.

When we laid off sometimes during part of the day—as the heat several times compelled us to do—we then rode at night. On arriving at St. Louis, we were at once subjected to an examination. Dr. Fellows had suffered no inconvenience, nor change except the loss of flesh before mentioned, and I nothing more save a slight lameness of one of the ankles. A hot bath set me almost right in this respect. That evening I walked from my lodging house to the theatre and back, a distance of over two miles.

Considering that members of the hos-

pital corps in garrison or active service would have to take a maximum of twenty trips from the line of battle to the dressing room or field hospital at an average distance of a mile and a half, and considering that we untrained and unskilled made sixty-five miles daily and without serious inconvenience, it is evident that working such an ambulance would scarcely even tire the average soldier.

To sum up: (1) This ambulance does away with the troublesome horse. (2) When detatched it pratically takes up no room. (3) It is quickly adjusted off or on. (4) The two attendants find seats on the wheels as ordinarily. (5) It is abundantly roomy for both bodies and appliances. (6) The flexibility makes the machine practicable for all kinds of roads. (7) It is light in weight—one man can take care of it and two can put it to full use. (8) It is comparatively inexpensive. (9) It is durable, being little subject to weather. (10) It can be cleaned and put back into perfect order in five minutes. (11) Its wheels can be used for double purposes. (12) Unlimited numbers of them can be used without burdening the march.

With great respect, I am yours, etc.,
GUSTAVUS M. BLECH, M. D.

Selections.

Food-Poisoning in the German Army.

The Sanitary Department of the German Army has recently issued a report that contains an account of the various outbreaks of food-poisoning that occurred between April 1, 1894, and September 30, 1896. It appears that the first outbreak covered by this report occurred between September 6 and 8, 1894, when 75 men of an infantry regiment taking part in the annual maneuvers near Königsberg were seized with diarrhea so severe as to suggest cholera. They were isolated in the military hospital, and soon the clinical thermometer as well as the result of bacteriologic examination made it possible to exclude that disease. It was found that all the men attacked had eaten food cooked in copper utensils, and that metal was found by chemic analysis both in the fragments left and in the dejecta. The symptoms were clearly those of metallic poisoning, with the peculiarity that in some cases there was a considerable rise of temperature at first, followed after a day or two in severe cases by hypothermia. At Strassburg in the same year, between October 28th and 30th, 72 men belonging to the same mess were attacked with acute gastro-intestinal catarrh, which was traced to the eating of preserved beef. On December 15 and 16, 1894, 50 men of a Westphalian artillery regiment were attacked by an illness presenting similar features, which was traced to the eating of smoked herring. On May 25, 1896, at Fort Longerich, near Cologne, there occurred 43 cases of slight diarrhea caused by a potato salad. At Horb, in September, 1896, 7 men were seriously ill with gastro-intestinal catarrh, after eating sausages in which bacteriologic examination revealed the presence of bacilli belonging to the group of B. coli communis. At the same time about 100 of the civil population of the town and neighborhood presented similar symptoms. Upon bacteriologic investigation the same bacillus was isolated from the stools in almost pure culture. All the patients recovered. Phila. M. J., 1898, ii, 1111.

The United States Army Ration, and Its Adaptability for Use in Tropical Climates.

Dr. Seaman said that history had always shown a greater loss in armies from disease than on the battlefield. The meteorological records showed that the extreme variation in temperature within the limits of the

United States was as much as 150° F. Our Government made certain distinctions between the uniforms for soldiers serving in the warmer and those in the colder portions of our country, but there had been apparently no official attention given to similar distinctions in the rations issued.

United States Army Rations.—The daily ration of the soldier in the United States army at the present time was as follows: Fresh meat, 20 ounces, or salt beef, 22 ounces, or pork or bacon, 12 ounces; bread or flour, 18 ounces; potatoes, 16 ounces; peas or beans, 2.40 ounces, or tinned tomatoes, 5.33 ounces; rice, 1.60 ounces; sugar, 2.40; coffee, 1.60 ounces; salt, 0.25 ounce. The "travel ration" was made up of the following: Hard bread (commonly called "hard tack"), one pound; beef, canned, 0.75 pound; baked beans, 0.33 pound; canned tomatoes, 0.33 pound; coffee, 0.08 pound; sugar, 0.15 pound. The regular ration, first given was essentially the same as that issued to the army in Cuba. According to Dr. Duncan, a high authority in questions of military hygiene, about one-sixth of the total income of food was expended as mechanical force and five sixths for the production of heat. The general experience of inhabitants of warm climates was in favor of a diet which was chiefly vegetable. This afforded a sufficient supply of albuminates without giving an unnecessary amount of heat-producing ingredients. The food products of each zone would be found to be those peculiarly well adapted for those particular regions. The natural appetite instinctively inclined one to eat those articles of diet best suited to the particular zone in which one happened to be. In the ration of the British soldier in India the meat component was less by from four to six ounces than in the United States ration, and the rice was greater by 4.2 ounces. The British ration had been criticised chiefly on the ground that it was too liberal, as it was well known that a moderate quantity of food was most desirable in the tropics.

A Suitable Ration for the Tropics.—A ration to be well adapted for use in the tropics must be non-irritating, easily transported, and easily preserved. The beef component and the salt pork should be reduced one-half, farinaceous food being substituted therefor; salt meats should not be issued more than once or twice a week; fresh meat should be supplied when meat is needed. Of the cereals, one of the best was hominy, as the husks were removed in the process of manufacture. Equally valuable was rice, but it should be given in three times the present quantity. The white bean of this country should not be issued, but instead the red bean commonly found in the tropics. It broke up readily in cooking, was more digestible, and did not excite irritation. These beans and hominy formed the staple diet of the Mexican army. In addition to the above, apples and prunes should be added to the rations for the tropics. It should always be borne in mind that the best results could not be obtained, no matter how good the ration, unless the food was suitably cooked. This was such an important matter that there should be a school of instruction for camp cooks. It should be made possible to requisition the invaded country for the food required for feeding the invading troops, as well as those in garrison. The German soldier in the tropics got 5.33 ounces of fresh meat, or 4.4 ounces of salt bacon, while he received 79 ounces of vegetables including potatoes. The Japanese soldier received as a ration 36 ounces of rice and an allowance of about six cents for his meats, tea, and other components.

Regulars and Volunteers Compared.—Major J. McG. Woodbury indorsed most heartily the position taken by the reader of the paper; clear, accurate and conservative. The changes suggested were thoroughly rational, and did not involve any special difficulties in the matter of transportation. If any one could see what the American volunteer can turn a good government ration into, one would come to the conclusion that nothing short of a miracle could save the volunteers from

destruction. The speaker then gave a vivid description of the utter lack of attention to cleanliness displayed in the volunteer camps, especially in the camp-kitchens, and compared them with the excellent state of affairs found among the regulars. This comparison was made simply to show that the regulars are, and the volunteers are not, soldiers. Dr. Woodbury said that about forty per cent. of all the disease among the soldiers in Porto Rico was the result of carelessness and ignorance in the preparation of the food. At a given time, when the regulars and volunteers were supplied with the same ration, there were twelve per cent. of the regulars sick as against nearly 36 per cent. among the volunteers.

The Flexibility of the Army Ration.—Col. Charles Woodruff, of the commissary department, said he could thoroughly endorse nearly every suggestion advanced in the paper—but we all love old friends, and the army ration has been an old friend of his for upward of thirty years. The meat component had been made large simply in deference to the taste of Americans. He had seen some of our soldiers marching in Montana when the temperature was 15° below zero, and others marching in a region where the temperature was 115° above zero, and yet at no time had he seen soldiers refuse meat. But the ration should be more flexible. The invasion of a tropical climate in midsummer with a loss of only about two per cent. was something, in his opinion, of which the nation should be proud. Any company commander who desired to vary his ration, instead of drawing beans, for instance, might draw all rice, or all hominy, or peas and instead of the quantity of potatoes he could draw a certain percentage in onions or other small vegetables. The salt meat could be sold back directly to the subsistence department at its full value, and in place of it could be taken anything of equal value. The United States soldier was, therefore, not compelled to live on an iron-clad ration ; its flexibility was greater than that of the ration of any other country. If the standard ration was composed of a great many articles, there would result a great waste of food, hence the government preferred the system of exchanges just described. The reason the government did not handle the red bean was that its skin was so thin that it could not be transported readily, and it absorbed moisture so rapidly that it spoiled very much more rapidly than the white bean. He entirely agreed with the reader of the paper that in tropical climates the troops needed very much less meat and more rice, but he still thought it better to leave the ration just as it was and allow of changes being made in the manner he had indicated.

The Army Ration and the Personal Equation.—Maj. H. S. Kilbourn said that the United States army ration had been modified according to climate for a great many years. The speaker said that he had a very good opinion of the present army ration, and believed it to be sufficiently flexible and adaptable. This matter of adaptability involved very largely the question of the personal equation.

Dr. W. D. Bell protested against the issue of green coffee to the men in the field, as this had decidely augmented the diarrhœas. It seemed to him that too much coffee was taken and that for a part of it tea should be substituted. The older soldiers filled their canteens with a mixture of two parts of vinegar and one of molasses, and they did much better on this than did those who drank coffee so immoderately. The men would trade off almost any part of their ration in order to get rice, which they craved. Curry was a useful addition to the food in the tropics.

The Navy Ration.—Dr. A. L. Gihon said that the ration that had been under discussion certainly was not the navy ration. The latter was very much more extensive, there being an immense number of alternates. The navy ration of to-day he believed to be perfection itself, but there must be a judicious selection to secure the best results. The particular food most suited for each climate was

within the reach of the men by commutation of rations. In his opinion it was a great mistake to tinker with the excellent government ration. It went without saying that the food must be of good quality and well cooked. The cooking in the navy at the present time was, as a rule, excellent. Louis Livingston Seaman, Major and Surgeon, U. S. V., Med. Rec., N. Y., 1898, lv, 258.

Two Brigades of Artillery Poisoned in Italy.

At Brescia some thirty soldiers of the sixteenth artillery, having had their usual supper, were immediatly thereafter seized with violent abdominal pains accompained by vomiting. Verdigris in the cooking-utensils was at once suspected, but no trace of it was to be found, and the food prepared and served in the same apparatus was next evening followed by the same symptoms. The food itself was next analyzed, but no deleterious matter was detected in it. Poisoning, however of a serious kind there has undoubtedly been, and, pending still more searching inquiry, the medical officers of the regiment suggest that the "pasta" or farinaceous element in the rations has been partially acidified, probably by the urine of rats in the storerooms—a cause not unknown in barrack experience. Such "accidents" as the above are all too freqnent in Italy. Med. Rec., N. Y., 1899, lv, 36.

Army and Navy Mortality in Life Insurance.

The mortality in the British army and navy, under modern war conditions, has been analyzed by the secretary of a large life insurance company. He found, to begin with, that the selection of men for entrance into the navy is so severe that in the first year the standard of health is considerably higher than among a body of insured lives in the first year of insurance. He concludes that 6.1 per 1000 is the extra mortality rate which, for life insurance purposes, may be considered as incident to service in the navy, and that 9.9 per 1000 must similarly be rated as the extra hazard for army service. He figures up these extra rates thus, taking as the observed period the ten years, 1886-95. In the army the extra rate among active lives in the whole force was 4.7 per 1000, while in the navy it was only 1.8 per 1000. But the risk of death in active war service was 3.8 per 1000 in both army and navy, from the standpoint of life insurance. He quotes from Smee to the effect that "after carefully weighing the available data, and giving consideration to the conditions of modern warfare, and the present strength and efficiency of European armies and navies, and also to the diminished mortality in respect to climatic risk, we propose, for the purposes of the report, to estimate that the British army and navy will be engaged once in forty years in a national war, involving the calling out in active military service for a term not exceeding three years of two-thirds of the whole force of officers and men in both branches of the service;" and Lord Rosebery, speaking before an association of commercial bodies some weeks ago, reminded his hearers that the country is in an epoch of danger, not having been engaged in a European war in forty years past. Among British naval stations, the Mediterranean has the highest death-rate, 10.6; the North American and West Indies station has the lowest, 5.1; in the East Indies station the extra mortality rate for insurance purposes was 7.0 in the five years, 1886-90, and 5.8 in 1891-95; the average for all stations is 7. The insanitary condition of the Mediterranean station is chargeable to filthy towns and harbors, but this is improving. The extra rate in the army has also declined from 10.6 in 1886 to 5.5 in 1896.—*The Independent*, November 24. J. Am. Med. Ass., 1898, xxi, 1487.

Vital Statistics of the Italian Army.

From recently published official statistics it appears that during 1896, 151,438 Italian soldiers, out of a total army-strength of 204,382 were treated in the hospitals and infirmaries. There were 1,184 deaths, of which 536 were due to infectious diseases, 225 being attributed to typhoid fever. The mortality was greatest during the first year of service, and between the ages of 21 and 23 years. Phila. M. J., 1898, ii, 991.

THE MILITARY SURGEON

A SUPPLEMENT TO THE

NATIONAL MEDICAL REVIEW

VOL. II. WASHINGTON, D. C., MARCH, 1899. NO. 1.

Original Articles.

CONCERNING LAY SUGGESTIONS ON MEDICO-MILITARY AFFAIRS.

BY EDWARD L. MUNSON,
Captain and Assistant Surgeon, U. S. A.

The outbreak of the war with Spain was marked by a large increase in the general correspondence of the office of the Surgeon General of the Army, especially with regard to that part relating to the medicinal treatment of disease. The subject matter embodied in these latter communications has been of all degrees of dissimilarity, impracticability and absurdity, while the correspondents were residents of various foreign countries as well as nearly every section of the United States. The letters received were largely with reference to the diseases especially prevalent in the Army at various periods, and, in the course of a few months, this office received, answered and filed no less than 626 communications, of which 186 related to yellow fever, 77 were in regard to typhoid fever, 87 were on the subject of malaria, 58 were concerning dysentery and the remainder were scattered among various other diseases. Practically, all these letters suggested methods of treatment for disease (the adoption of which the writers frequently desired should be made compulsory on Army Surgeons) or else stated the possession by the writers of secret methods or formulæ, guaranteed infallible for one or many affections, which they were willing to impart to the Government for a consideration; the consideration varying from a railroad pass to the lump sum of $50,000, and from an appointment as nurse or physician to a life pension. The polite refusal of the Surgeon General to purchase their stock in trade was sometimes followed by charges and complaints to the President of the United States, or to the Secretary of War, that the Medical Department was criminally at fault in not giving the benefit of their superior knowledge or marvelous therapeutic discoveries to the suffering soldiers. This class almost invariably spelt fever "feaver" and understood no pathological difference between malaria, typhoid, yellow and other fevers. They were uniformly told that the Medical Department of the Army could neither purchase nor make use of any secret methods or preparations in the treatment of disease.

Another large class of correspondents was composed of purely disinterested in-

dividuals, usualy veteran soldiers of the civil war and motherly old ladies, who were anxious only to assist the Department in the alleviation of suffering. Such were always courteously thanked for their interest and suggestions; no matter how valueless or grotesque the latter might be.

Some of the correspondents were anonymous and a few were evidently of unsound mental condition; as instanced by the maiden lady who, for some weeks, bombarded the office with thirty page letters of closely written and almost illegible manuscript, on most irrelevant subjects and of the greatest incoherency.

In tone, the correspondence varied from the modest suggestion of some domestic simple by some patriotic old lady, to the blatant offer of the Chicago quack, who claimed his ability and willingness to preserve the soldiers from death and from contracting disease of any kind at the rate of ten dollars per capita.

Many of the communications received, as the appended exact copies illustrate, are curiosities from a literary as well as professional standpoint, and frequently were so incoherent and badly written as to be made out with difficulty, even by the experienced correspondence clerks of the Department.

While the better element in civil life appeared to appreciate that the Medical Department of the Army was presumably in possesion of adequate professional knowledge for the proper treatment of disease, a certain number of individuals, previously unknown to fame, appeared to be convinced that they, and they alone, were capable of "curing" certain affections, notably yellow fever, and this conviction was apparently stronger in direct proportion to their own illiteracy and evident lack of medical training. Many, alleging themselves to be physicians, the appearance and orthography of whose commuications failed to substantiate their claim to education, insisted that their services be accepted, as experts, to treat disease, particular or general, by some infallible method or secret preparation. The egotistical impudence of some of these individuals was frequently refreshing. In the rare intances where their valuable "secrets" were divulged to the office they proved either to be well known drugs or combinations long in the hands of the profession, or else extraordinary preparations compounded and administered in defiance of the laws of chemistry and therapeutics. It was noteworthy that, while a large number of individuals claimed to possess remedies of almost miraculous efficiency in the cure of yellow fever, these experts were largly from the northern and northwestern parts of the United States, where yellow fever has never prevailed, and from such temperate climates as those of Germany, Austria and Russia.

From their letters one received the impression that the rapidity with which a remedy would cure yellow fever varied directly as the distance of its originator from endemically infected points. It was noteworthy that no special claims as to the cure of yellow fever emanated from southern points where the disease has from time to time prevailed. As illustrating the value of lay opinion in regard to yellow fever it is only necessary to name the following remedies all of which have recently been strongly recommended to this office as positive cures for this disease.

1. Almond oil.
2. Sulphur and molasses.
3. Quinine.
4. Holman's Liver Pad.

5. Refrigeration of the sick room.
6. Ginger root.
7. "Yellow Jack Bitters."
8. Wine and loaf sugar.
9. "Microbicide."
10. "Diffusible Tonic."
11. "Combined Cure, Yellow Fever and Worms."
12. "Calaya."
13. "Salvite."
14. "Dr. Osgood's India Cholalagogue."
15. Asafoetida and gum champhor.
16. Carbolic acid.
17. Washing in sulphur water.
18. Mustard plasters and pediluvia.
19. "Oxydonor animator."
20. "Dixie Chill Cure."
21. Maintained asepsis of air passages.
22. Orange leaf tea.
23. "Zymoticine."
24. Wire masks and absorbent cotton. (prophylactic).
25. Powdered sulphur in shoes and clothing.
26. Juice of Chamomile Blossoms.
27. "Labordine."
28. Hot Lemonade.
29. Preliminary administration of antiseptics (prophylactic).
30. "Bosso."
31. Composition Liver Pad.
32. Boiled Water.
33. "Wiskey and Lemon."
34. The burning of Tar (prophylactic and curative).
35. A pinch of salt on tongue twice daily. (This will cure all fevers).
36. Heated molasses.
37. "Micmac Indian Remedy."
38. Turpeth mineral.
39. Sanarelli's Serum.
40. "Electropoise" (guaranteed to cure 95 per cent).
41. "Dr. Gray's Cure."
42. Lemonade and Epsom Salt.
43. Burning of Rosin (prophylactic and curative).
44. Cupping,
45. Powdered charcoal.
46. Bathing in alum water.
47. Lemons and oranges.
48. Artificial heating of sick room.
49. Bathing in sea with clothes on.
50. Milk and Tar, boiled together.
51. Mineral water (brand not specified).
52. "Mellon's Yellow Fever Remedy."
53. Peach leaf Tea.
54. Placing patient in trench and covering him with loose dirt.
55. Tea of bark of Mesquite Bush.
56. Olive Oil, Salt and Lime Juice.
57. Green Tea and Cognac.
58. Pint of lime juice after meals.
59. "Antidotum Altimatum."
60. Treatment of the case by a homeopathic physician.
61. "Caldwell Remedy."
62. Hot water baths.
63. Vapor of "crude oil."
64. A diet of salt mackerel.
65. "Cooper's Embrocation."
66. Fluid Extract of Eucalyptus.
67. "Amarin."
68. "Maya Indian Cure."
69. "Gaseo-Chemic Treatment."
70. The intravenous injection of raw onion juice.

Many of the above remedies were recommended by a number of individuals; sulphur, in some form or other, being especially popular and its use in the shoes being strongly urged upon this Office by no less an individual than the president of the American Humane Society. Many of these alleged remedies are stated to have been handed down as heirlooms for generations or to have been originally derived from some old sea captain or some Jesuit priest who had vouched for their efficiency.

In regard to typhoid fever one individual urged the employment of onion poultices to the soles of the feet as never failing to abort the disease, while another wrote to call attention to the fact that a diet of well browned peanuts would prevent small pox. The Office was told that the troops, while in the tropics, must be given a daily ration of tobasco sauce; that every light complexioned man going to Cuba should take a daily dose of sodium phosphate; that the free use of garlic would ward off all diseases and that the

city water of Orange City, Fla., was a febrifuge in malarial fevers. It was urged to purchase "Lincoln Spring Water" for the cure of insomnia and to require the soldiers to wear a flannel bag containing camphor to avert malaria. One woman wrote to express her suprise and indignation that the troops were not provided with houses. A doctor of medicine called attention to his device to make each soldier breathe through his nose and so escape the inhalation of microbes. "A Doctor of the Laws of Nature" offered her services; the maker of the "Wonderful Ten Minute Pile Cure" asked the best and cheapest way of bringing his product before the public, and the inventor of a patent "Flea Catching Machine" urged that a number be purchased for the use of the soldiers in the tropics. Another writes the President to request Congress to appropriate a sum for the purchase of his remedy for piles and offers to take the Chief Magistrate into partnership for its manufacture in return for such action. A man from Michigan desires the contract for supplying slippery elm bark; from California comes a letter urging the Adjutant General to prevant malaria by the "medication of the feet" of the soldiers, and a New York Chemical Company wishes to introduce "Liquid Killem," a parasiticide, among the troops at Chickamauga. One individual surprised the office with a box full of dirty bottles of various shapes and sizes, filled with the most unpleasant looking decoctions of domestic manufacture, which were warranted specifics for everything under the sun; one bottle "curing tisix, scroffalo, stome ache trubbles, and stop that tiard fealing." Another specimen is a "Great Blood Purerfier" and is stated to "wark merricals."

The box was accompanied by the following letter:

May 30th 1898

to the Sergeoneral. Dear sir I find that these Medisons that I send yau, have bean so useful And doing so mutch good, that I Would if yau Would per mitme, that I Would Continure finding that I have removed paims And Curered people Who have been suffering for years but of Course I Want not conflict With the Law And Would be pleased if I could Continure."

Another wishes to introduce his preparations into the Army and sends samples of his villainous compounds. He evidently is convinced that the Office has nothing better to do than to solve the riddles presented to it, so the following letter is sent by him.

"to the Surgeon General's office

Dear Sir I Write to Ask some informtinon, About that Box of Sample Medison that I sent in the Month of June 1898. And you told me that on account of War With Spain that it Would be uterly Imposible to Anellize, And I thought that I Would Ask you When or at what time that you thought that the Doctors Would be Able to Anellize or wheather that you had Annellized or not."

One enterprising M. D. requests that the Government obligate itself to pay him money (sum not specified) in case a thorough test of his treatment for typhoid fever proves of value, generously leaving a loophole as follows: "After testing the treatment if it cures as claimed, then the Gov is due me the amount agread upon, if not she is not due me anything."

Another approaches the subject from a religious standpoint.

"Mar. 21, 1898.
ASCUTNEYVILLE, VERMONT

Dear Bro. McKinley
Honored Sir:

Jesus says, Whatsoever ye shall ask in my name it shall be done. We know that Jesus will fulfil his promise. Now I do ask in the name of Jesus that the soldiers of the United States Army may have a medicine that is a sure cure

for rheumatism & many other complaints. You will see by this circular what it has done & what it will do. I have sold it to many people & there is not one that have taken it according to directions but what speak very much in its praise. It is manufactured by the Swanson Rheumatic Cure Co., 167-169 Dearborn St., Chicago, Ill., Where you can get it."

A gentleman from West Virginia who desires to sell a remedy for driving away flies from the sick for the sum of $50,000, prefaces his request by—

"SCHOOLHOUSE
West-Va

Gents. Please donte take me to be a crank in regarde to below as you See I ante no college graduate—as i am amkwarde in my explanation—But I mean Square & honest. Business."

From Allegheny, Pa. comes a very urgent invitation for the Surgeon General to be present at the exhibition of a new apparatus, of which the inventor says:

"It is said the germ of yellow fever is not yet known if so I will say that my instruments will reveal it if it exists in nature. If it is smaller than the smallest known microci then it will very likely prove to be one of the ever living Atoms which manufactures the poisonous substance of "gass" that produces the disease."

From the state of Maine comes the announcement of the cause of leprosy, with a modest renunciation of the honor of its discovery, as follows:

"NAPLES, ME. March 25, 1898.
ARMY MEDICAL MUSEUM:
Surgeon Generals Office, U. S. A.:
Washington, D. C.

I have been directed by the Curator of the Smithsonian to introduce to your attention my recent practical discovery in physiology. My discovery is perhaps best explained by a review of first causes. If an intimate knowledge is entertained of first causes. Then their affects are better appriciated, and dealt with. The very obsucurity of the first causes of "Leprosy" is perhaps the reason of the previous undiscovery of a preventive, or cure.

The discovery that I desire to call to your attention is my discovery of the first causes of "leprosy" and its cure. To be very brief:—My method is the subcutaneous injection of serum of animal blood. The patients body should enjoy the exposure to air and sunlight. The first treatment is to be followed by the adoption of the blood baths of the ancients. I may add in conclusion that the first cause of leprosy is cannabalism. I prefer its introduction—and tests—to be made by the Institution. I desire no further personal identity with the discovery nor the honor."

A physician residing on Henry St., Brooklyn. N. Y., writes:

"BROOKLYN, N. Y.
May 15th 1898.

DEAR GENERAL: In my forty years of medical experience I have met with nothing more certain than the curative effect of bean water upon punctured wounds, & in the interest of our soldiers, I feel it my duty to inform you of a remedy at once so simple, attainable, & efficient."

Then a note of advice and warning from a lady of New Bedford, Mass.

"DEAR SIR: Whoever you are, this war strikes a wild terror to my heart, and I fear that my countrymen will be tortured by the Spaniards. If I were a soldier, and could get it, I would carry morphine enough to know nothing more very soon after it became evident that I should be captured by the Spaniards, who are very cruel.

I fear Blanco's great confidence may lay in some under water plot similar to that which caused the destruction of the Maine.

"Were half the power that fills the world with terror,
Were half the wealth bestowed on camps and courts,
Given to redeem the human mind from error,
There were no need of arsenals or forts."

The Office was in full accordance with the sentiments expressed in the following extract, especially the last clause.

"Ft Madison Iowa

Jan. 27 1899

Mr Alger Dear sir

Dear sir * * * * * they sent all through the country for Doctors to come and see what it was and they could not tell weather it was smallpex or chickenpox they do not took any more a tike than a Hog or Dog Why sir as big a fool as i am i can tell the smallpox when it first comes out and as soon as it shoes on the sirfis i can tell wether the pearson will live or die and all your aproved medisons wont change the condition if you dont bleave it * * i will Close this by sayind after looking the the thing all over i find i was a dam fool for wighting in the first place."

A superintendent of schools suggests:

"Office of County Superintendent of Education,

Georgetown County.

Georgetown, S. C., July 30th 1898.

Hon R. A. Alger Secty of War,

Hon. Sir:

It is painful to the people of the country & myself to see how deadly the Typhoid fever has been to our brave soldier boys, and you will pardon me to make just this suggestion in its treatment. To wit: Chop up a half dozen onions with a teaspoonful of salt, make two small sacks to fit soles of feet, and will vouch that in from one to twelve hours the fever will depart. If collapse take place then use stimulants. Dont be in a hurry to take off poultices.

A patriotic medical man offers his servces to his country in the following letter:

"Jefferson County, Pennsylvania March 28, 1898

Magor William McKinley

Presedent of the U. N. S. of america. Sir as the ought look is at Preasendent it Puts me some in Remenbans of 1861 & 1865 as the Nation or our Repuplick Neaded some help and as the way things are Stiring Round i wish to ask Wether i coodent git a Pointment as. a Doctor to some Regement or some head quarters i ame a veateran of 4 Pa Cal of 1861 & 1865 and a member of the grand armey to the Repuplick of the United States i have seen you in former days allso. Ex President, R. B. Hays of the 23, Ohio i lived near freemont ohio for 10 years. I ame Well a Ware of youre mind being thirly put to task at the Preasedent crises as it seems at Preasent thoe we might have War with spane. Will you Kindly Remmber me and find a Posetion for me

Yours truly

(Signed) Dr. J. J. B.

Jefferson County,

Pennslyvania."

Two naturalized citizens of the United States offer their assistance to the Department.

"Anaconda, Montana, the 1 April 1898

His Highness Mr. Alger Secretary of War

Dear Sir,

Excuse my writing to you, but I feel so much for this Country that I like to do Something too in time of war. I can make very good Salf for wounds, and other for burn, (Ointment for burns). If you allow me, I will Sent you a Sample of it. I am born in Belgium) and I no that you need good Pigeons in time of war, for your forts and for your Man of War. If you need Some, I will go to Belgium to get Some, because I no there are the best flyers in the world. Now is the time to get the best youngones. (England get his Pigeons there too)

One's more excuse if I dint Wrong.

Respectfully yours"

"Rochester January the 9 99

Mr Allgir Secretary of War

Washington D. C

I. leth you no that I. mak Invention of Experiment for the Yello Fiber, for the Unitat Stats Army, I. rod a letter down to Mr Presendent McKinley he tell me, that your Business, so I. tell you that Experiment is the bust, what you can feind in the World, you no that you

self that so many Solder going Dead, and get sik down Cuba and all ofer the Sout. If you thak 2—3 draps from that Experiment but that in a glas with Watter and den Drinket, so you by savet from the Yello Fiber, so I wont to have you to tell the War Department about that, I. will proof that to yo and to the Unitet Stats of Amerika, If the War Department or the Goverment give me, some Mony so I going down to Cuba and proof that, I send you a Sample If you wanted, pleas leth me no so sun is posible for you.

If the War Department dont thak that so I give that to England or somewhere

yours Respectfully

Gurantet by E. A. B.

Rochester N. Y."

The conclusion to be drawn from this article would seem to be that Carlyle's definition of the English nation "Thirty million people, chiefly fools" applies also to our own country.

Selections.

Physical Examination of Volunteers U. S. Army.*

BY PRESLEY C. HUNT. M. D.,

Washington, D. C.

The late war with Spain furnished me the opportunity to examine 1,798 men; 964 at the time of recruiting or mustering in, and 834 belonging to regiments which had seen service in Cuba and Porto Rico previous to its being mustered out.

The following is a summary of the standard laid down by the Surgeon-General's office for examination of recruits for infantry regiments: *Age*, 18 to 45; minimum *height*, 5 feet 4 inches; *weight*, 120 to 190 pounds, *chest expansion*, at least two inches at nipple for those below 5 feet 6 inches, 2½ inches for those up to 6 feet, and 3 inches for those 6 feet or over. Minors were required to obtain their parents' consent.

The mustering in officer had the authority to waive the lack of a fraction of an inch in height or a few pounds in weight. In one case, 1¼ inch was waived. The Surgeon-General, in several instances, accepted men whose vision was ten-twentieths.

The percentage of men passed was 54 per cent. The percentage would have been much smaller had I had a larger number to examine. The percentage of men passed in the regular army during the past year was 22 per cent. The reasons for this marked difference between the regular and volunteer service were as follows:

1st. Men would enter the volunteers who, in time of peace, would never think of entering the regular service

2nd. The regular service required a man to be under thirty years of age, and able to read and write the English language. No such provisian was required of the volunteer.

3rd. The examiner would not waive causes which would not reject for enlistment in the volunteer service.

The causes of rejection of the 414 out of 964 were as follows:

Below minimun in height	16
Under weight	31
Over age	1
Minors without consent	3
Mitral regurgitation	24
Bicycle heart	6
Other cardiac lesions	3
Consolidated lungs	5
Chronic bronchitis	27
Chronic pharyngitis	3
Defective teeth	4
Defective speech	3
Defective hearing	5
Suppurative otitis media	3
Myopia	26
Cataract	3
External strabismus	2
Obesity	3
Deformities	11
Eczema	5
Syphilis	7
Gonorrhœa	27
Flat chest	37
Deficient chest expansion	26
Varicose veins	18

*Read at a meeting of the Medical and Surgical Society of the District of Columbia, January 5, 1899.

Hemorrhoids	14
Varicocele	23
Orchitis	3
Hernia	7
Flat foot	21
General causes	17

In the examination of 362 colored men, I rejected one for cataract of the left eye; one for external strabismus; all others passed eye-tests.

Another noticeable feature was that there were no rejections for varicose veins of the extremities. While I rejected thirteen for varicocele, I found one out of every five of the recruits affected with varicocele, but being guided by an article of Nicholas Senn on the subject, I rejected only marked cases. I now believe this to have been a mistake, and much care should be taken in accepting a man with a moderate varicocle. I found, in the muster-out examination, sixteen cases out of sixty-one aggravated by military service.

The examination previous to muster out of 834 men of a regiment who had seen service in Cuba and Porto Rico, and had passed a severe physical examination previous to enlistment by Col. Wm. A. Forwood, Assistant Surgeon-General U. S. Army, was performed in the shortest time on record. While the records at the War Department prove it to be by far the quickest muster out known yet, owing to the executive ability and tireless energy of Captain G. K. McGunnegle, chief mustering officer, and his assistants, Lieutenants McNeil and Applewhite, U. S. Army, they not only saved thousands of dollars to the Government, but the records, papers, etc., were in such perfect condition as to receive encomiums at the Department.

The paper I was called upon to fill out for each man, required—

1st. The soldier's present health?

2d. Whether, if disability was present, it was caused by military service?

3d. If the condition would prove permanent?

4th. If it would effect him in the performance of manual labor?

I found a marked difference between the condition of the officers and men—90 per cent. of the former and 30 per cent of the latter—able to perform immediate military service (Nov. 20, 1898). Thirty-nine out of 866 were confined to their beds and were not examined.

I found with the exception of three or four, every man who had gone to Cuba had suffered from the "fever." I found that no matter for how short a time they suffered, the fever was apt to return. I remember one day, that out of eighty men, I sent three to the hospital, who had reported for examination, and four others were suffering from marked fever (102°–103½°) at the time of examination.

Of the men who had seen service in Cuba, 1 per cent. were improved by military service, 5 per cent. were in as good physical condition as at the time of enlistment, 24 per cent. were but slightly affected, and as a rule, the troubles were not traceable to military service.

The general condition of the remainder of the men—70 per cent., 528—were as follows:

Irritable heart, due to fever	365
Mitral regurgitation	4
Chronic bronchitis	214
Acute bronchitis	47
Phthisis	3
Gastritis, in some form	158
Enlarged or congested liver	116
Enlarged spleen	316
Inflammatory conditions of intestines	53
Irritability of bladder and incontinence of urine	76
Nephritis	5
Hemorrhoids	11
Varicocele	61
Inguinal hernia	3
Rheumatism	26
Myopia	19
Atrophy of optics due to rupture of blood vessels following typhoid fever	1
Slight eye strains	29
Slight deafness due to quinine	17
Chronic nasal catarrh	9
Sprain of back	3
Old dislocation right shoulder	1
Gunshot wounds left forearm, one producing slight deformity	2
Badly set Colles' fracture	1
Secondary syphilis	1
Suffering from pains in the muscles, especially the calves of the legs and lumbar region, loss of weight from ten to thirty pounds, accompanied by more or less debility	471
Relapses of fever continuing to recur up to present time (January 4, 1899)	87

In marked contrast with the above, was a company of this regiment which

had gone to Porto Rico. Only 10 per cent. were in any way affected, and these so slightly that it was possible for the entire company to perform military duty.

DISCUSSION.

Dr. (Major) Borden said that he had been in the military service for fifteen years, and that he therefore looked at the matter from a military as well as a medical standpoint. He had made no physical examination of volunteers, but had seen many returning volunteers at Montauk and New York city, and from what he had seen and heard, the volunteers as a class were distinctly inferior to the regulars in physique. This was due to the necessity of obtaining quickly a sufficient number of men. Such necessities should not arise. Nations might be compared to organisms. In the lower organisms, the cells were less specialized, so in the beginning of nations the individuals were less specialized; a man could be at once a citizen and soldier. But in our higher civilizations, as in higher organisms, individual work was extremely specialized, and individuals trained to certain work could best do that work. In nations as in organisms, change was slow.

The military experience of the United States had firmly implanted the idea that the volunteer was an efficient fighting man, but when investigated this could be seen to be extremely erroneous.

The volunteers of the Revolution fought against a half-hearted foe, badly officered.

In the War of 1812 the circumstances were similar.

The Mexican War was fought against a distinctly inferior foe. The Civil War was won by preponderance of force, the volunteers really being trained soldiers before its close.

In the Spanish-American War the volunteers had been little more than a costly experiment.

This analysis shows that we cannot take a man untrained for military service and get the same service from him as from a regular.

It had been argued that the National Guard would be effective, but many of the men had never undergone a physical examination; and when it was attempted to muster this organization into the United States service, so many men were thrown out as to practically destroy the organization. Their military training was also most superficial. Virginia Med. Semi-Month., 1899, iii, 661.

The Krag-Jorgensen Bullet-Wound.

At my request, Dr. Mariano Ojuna, surgeon in chief of the military hospital at Santiago de Cuba, kindly sent me, on Aug. 19, 1898, some notes which I offer as a small but interesting contribution to a very important subject. Dr. Ojuna regretted his inability to prepare a more elaborate report, being at the time exceedingly busy in superintending the transfer of the sick and wounded to the Spanish transports. But first a few preliminary remarks.

He states that 541 wounded—43 officers and 498 men came into the military hospital for treatment. Of the killed he makes no mention. As this hospital was the only available one, we may infer that all the wounded really *hors de combat* were admitted to it. On the other hand according to the official Spanish report, the casualties were as follows: Killed, officers 17, men 107; wounded, officers 59, men 556; missing, officers 7, men 116.

As this report includes the few navy casualties which occurred before the destruction of Cervera's fleet, and likewise accounts for a certain number of slightly wounded men who never entered the hospital, the discrepancy between it and Dr. Ojuna's figures is sufficiently explained. We may note, incidently that the above statistics show a proportion of casualties of about 10 per cent.—1.7 killed and 8.3 wounded. On our side the total casualties at San Juan Hill were about 14 per cent.—1.86 killed and 11.14 wounded. The ratio of killed to the whole number struck was one-fifth among Spanish, and one-seventh among American troops.

In order to justly appreciate the results described by Dr. Ojuna, it should be remarked that the hospital where all these cases were treated is an old building without adequate water supply and without sewerage, the execreta being emptied into a large pit; it was also at that time crowded to two or three times its normal capacity: in a word, it appeared beyond the possibility of good sanitation. To this we may add that proper food and several important medicines were scant and became entirely exhausted. Dr. Ojuna's notes, freely translated, are as follows:

" . . . Since the beginning of hostilities, 45 wounded officers were admitted to this hospital; 26 have been discharged cured and 7 died; of the others only two were serious cases: one with comminuted fracture of the left tibia, already united and nearly well, the other with fracture of the same bone but loss of over a centimeter of substance nearly throughout its thickness; in this case a cure is also expected, in time.

"All these wounded, with hardly an exception, never had any fever. They were mostly treated with solution of corrosive sublimate, iodoform, iodoform gauze and absorbent cotton; that is, with antiseptic dressing, changed only every two or three days according to indications. There were fractures of various bones, such as humerus, ulna, radius and those of the carpus, tarsus and metatarsus, but I did not observe a single case of arthritis, nor the slighest complication. As an interesting fact, worth special mention, I did not have to perform a single amputation among all the wounded officers.

"Of the seven who died, two had the skull fractured by fragments of shell, with protusion of brain matter, while the other five succumbed to internal hemorrhage or peritonitis.

"Of the wounded soldiers, 498 were admitted; 34 died of perulent infection, tetanus, internal hemorrhage and severe wounds of the skull and brain, the latter causing the greater part of this mortality. There now remain only 47 cases which will require ambulance transport to the ship.

"The parts involved were mostly the extremities, inferior and superior, much more rarely the chest, head and abdomen. Very many cases were of great gravity, but thanks to the treatment pursued, the skill of surgeons and the sanitary care of the attendants, all dangerous symptoms subsided in a few days and the cure followed a normal course, the wounds remaining completely aseptic. Here also the striking fact must be stated that not a single amputation was required or performed, a result speaking high praise for the conservative surgery always advocated by Spanish surgeons, as well as for the treatment followed.

"As a general rule, the bullet passed through the body or limb, making two clean holes, those of entrance and of exit. Some wounds had no hole of exit, but in most of them the bullet lodged near the skin and was easily extracted.

"In the case of an officer, the bullet ranged through the face: the hole of entrance was very small and otherwise normal, but that of exit was much larger, with irregular, ragged edges, burnt and discolored by grains of powder; there was much destruction of tissue and healing was very slow. I believe this case was produced by an explosive bullet, such as the insurgents had frequently used before, and that an insurgent was the author of this outrage against the laws of war. Never did the thought enter my mind that it could be imputed to our loyal enemy, the Americans. . .

"The average time required for the healing of the great majority of our wounded was from 20 to 25 days, even of those most gravely hurt; penetrating wounds of abdomen and chest recovered in a proportion of 70 per cent. with amazing rapidity, without leaving any complications. . . ."

These notes, incomplete as they are, corroborate the observations made among our own wounded of the effects of the Spanish Mauser bullet, and justify us in formulating the following conclusions:

1. The rapid-firing, long-range modern rifle, with small steel-jacketed bullet, does not produce a larger percentage of casualties than the weapons used in our Civil War or the Franco-Prussian War.

2. The proportion of killed to the wounded is less than before.

3. Wounds heal with astonishing rapidity, even a majority of those penetrating the abdomen and chest, so fewer deaths occur in field hospitals.

4. Few, if any, primary operations are now performed, and amputations (except as a result of artillery fire) are hardly ever required.

In view of the unsanitary state of the Spanish hospital, and the, perhaps excessive, conservative attitude of the surgeons, the results obtained are certainly very remarkable, and show what, despite adverse conditions, we may expect from an aseptic bullet, rest and antiseptic treatment. These results are, on the whole, better than those obtained on our own side, and the reason must be the necessary and often rough transport to which our wounded were subjected, first from the front to the field hospital, then from the hospital to the sea-shore, from the beach to the hospital ship, and so on, until they reached their final home destination.—By Lieut.-Col. Valery Havard, Chief-Surgeon U. S. Volunteers, Bridgeport, Conn. J. Am. Med. Ass., 1898, xxxi, 1412.

Experiences In The Hospitals Of Philadelphia With Typhoid Fever Originating Among The Soldiers in The Late War.

At the University of Pennsylvania. By James Tyson, M. D.

During the late Summer and Autumn of 1898, there were admitted to the Hospital of the University of Pennslyvania 112 cases of typhoid fever from the various military camps of the country. A few of the cases admitted as typhoid fever are omitted from this report because of the absence of distinctive symptoms or because convalesence was so far establised that they illustrated no symptons and required no treatment.

The average age of 105, whose age was secured, was 23¼ years. Of the 112 cases, 107 recovered and 5 died, say 4.5 per cent., actually a little less, leaving 95.5 per cent. of recoveries. Of the cases admitted 77, or 68 per cent., reported headache among the earlier symptoms; 19, or 16 per cent., vertigo; 19, or 16 per cent., nosebleed, and 19, or 16 per cent., nausea and vomiting. In 61, or 54 per cent., there was diarrhea; 29, or 26 per cent., were constipated in the begining and more or less throughout, while in 22, or 19 per cent., no allusion is made to these states. There was so much confusion in the reports of chills and chilliness that they cannot be regarded as reliable. Pain in the back and limbs was reported in 57, or 50 per cent. Rose colored spots were noted by us in 60, or say 53.5 per cent., absent in 52, or 46.5 per cent. Hemorrhage of the bowels occurred in 9, or 8 per cent., and perforation followed by peritonitis and death in one case. Of the cases of hemorrhage 2 died and 7 recovered, and the perforation alluded to was the cause of death in 1 of these. Tympanitic distention of the abdomen was present in 96 cases, or 85 per cent.; dryness of the tongue and sordes in 6, or 5.3 per cent. Delirium was noted in 18, or 15 per cent. The spleen was enlarged appreciably to percussion or palpation in 62, or 55 per cent.

The Widal reaction was found in 71 cases out of 92 in which it was tried, or 77 per cent.; in 2, or 2.1 per cent., it was doubtful, and in 19, or 20.7 per cent., it failed. In 20 it was apparently not tried. In ten cases the test was made twice, in 1 three times. Of those tried twice, 7 were positive both times; 2 were negative at first and positive at the second; 1 was positive at first and negative the second. In the one in which it was done three times it was negative at first and positive at second and third. The tests were made partly in the City Laboratory and partly in the William Pepper Clinical Laboratory. We are inclined to believe that the number of positive reactions in the latter would have been larger but for the fact that one of the cultures used proved to be defective. The stage of the illness at which the test was made was very different, and in most cases it was impossible to ascertain the day of the disease even approximately. The result of our experience with this test has been to increase our confidence its reliability. It occasionally fails-

it may at times appear late, but if obtained by competent, accurate and conscientious observers and is associated with continued fever, I accept it as sufficient evidence of the presence of typhoid fever. Sources of error due to carelessness or incompetency of the person making it should not be regarded as invalidating the test, and I believe that if these elements of error are eliminated the number of cases in which it fails and the number in which it occurs in other diseases likely to be confounded with typhoid fever will be small.

Abscesses or boils were present in 7 cases, or 6.2 per cent.; bedsores in none —a happy event which may be laid to the credit of modern nursing. Parotitis, which proceeded to suppuration, was present in one case. This patient died on the 21st day, and during the last week had symptoms of localized peritonitis. There were eight cases of thrombosis, or 7 per cent., an unusually large proportion when it is remembered the text books put it down at 1 per cent. In 6 the left leg was involved ; in 2 no mention is made. Some of these cases were quite mild. Localized peritonitis clinically recognized was present in 2 cases, one being associated with appendicitis, of which there was one case.

Pneumonia is reported as a complication in 2 cases, 1 of which was fatal ; bronchitis in 29, or 26.7 per cent. Albuminuria was noted in but 3 cases, in one of which—a fatal case—it was copious ; in 2 it was small, but in one of these it was accompanied by hyaline casts. In a number of these cases the urine was not examined, or if examined, the results were not recorded, so that our observations in this direction are defective. The malarial plasmodium was reported present on admission in one case, but was not found at the second examination. In this case there were rosecolored spots, large spleen, and the blood responed to the Widal test. In two cases the malarial organism was found during convalescence associated with other symptoms of malaria. Ulcerative tonsillitis occurred in two cases, orchitis in one case and otitis in one. There were 12 relapses among our cases, a percentage of 10.7. In two cases at least there were two relapses. In one a supposed third turned out to be a brewing appendicitis, which at one time threatened the life of the patient but ultimately passed away, seemingly completely, and the patient was discharged after 118 days in the hospital.

As far as could be determined, omitting certain cases in which it was impossible to determine even approximately the onset of the illness the average duration was 41 4-5 days. The average date of the illness at which the temperature first reached the normal in cases of recovery is of much more practical importance and may be set down as nearly as determinable at 18½ days. Of the fatal cases it has been mentioned that one died of perforation and succeeding peritonitis, death occurring on the 21st day. The remaining deaths may be ascribed to exhaustion after long illness or high temperature. The second died on the 10th day after admission and apparently on the 10th day of the disease, having been the subject of high temperature throughout. The third died on the 31st day, also exhausted by high temperature. The fourth died on the 43d day, apparently of toxic adynamia. The case was a nervous one, in which tremor and weakness were characteristic from the beginning. The pyrexia was never extreme and death was preceded by obstinate vomiting. The fifth fatal case was admitted convalescent on what appeared to be the 36th day of the disease ; relapse began on the 42d day, pneumonia of the left lower lobe was recognized on the 72d day, and he died on the 77th day of the disease. No autopsies were secured.

The treatment outside of the dietetic, may fairly be said to have been the cold tub-bath method of Brand. Not every patient was tubbed, for some did not reach the temperature which called for tubs, namely 102.2° F. In the majority of the cases on the other hand the hydrotherapy, by reason of late admission, was instituted much later than its advocates hold should be done in order to secure its best results. I do not insist that

the very favorable results were due solely to the Brand treatment. There were undoubtedly a good many mild cases. On the other hand quite a number of these were thrown out of consideration altogether. My experience with the Brand treatment in this set of cases has in no way diminished my confidence in it as the best available method for treating typhoid fever, subject to the limitations which good sense and experience may demand.

At the German Hospital. By J. C. Wilson, M. D., Physician-in-Chief.

The total number of soldiers treated in the German Hospital was 275. Of these 147 suffered from enteric fever. The first soldiers were admitted August 21, 1898; the last were discharged January 2, 1899. Of the 147 cases of enteric fever 5 died—a mortality of 3.4 per cent. The average age of the soldier-patients was 23.5 years. They were all volunteers—in a certain sense picked men, who upon enlistment a few months previously had fulfilled the requirements of a fairly rigorous medical examination.

As bearing upon the period of greatest prevalence of enteric fever in the camps the following figures are of interest:

24, or 16.3 per cent, were admitted during August.

28, or 19 per cent, were admitted during September.

89, or 60.5 per cent, were admitted during October.

8, or 5.5 per cent, were admitted during November.

By far the greater number of these cases were brought from Camp Thomas and Camp Meade in two trains organized and equipped by the German Hospital authorities. Some were received by allotment from special trains provided by other hospitols or the city. Some few wandered into the hospital.

95, or 64.6 per cent, were from Camp Meade.

37, or 25.2 per cent, were from Camp Thomas, Chickamauga.

4, or 2.7 per cent, were from Camp Poland, Knoxville.

2, or 1.4 per cent, were from Camp Fernandina.

2, or 1.4 per cent, were from Camp Black.

1, or .7 per cent, was from Camp Wickoff.

1, or .7 per cent, was from Puerto Rico.

5, or 3.4 per cent, were unclassified.

The average duration of the disease upon admission was about 11.3 days.

The date of the beginning of the disease could only be approximately determined in the greater number of the cases. In this respect the cases resembled those encountered in civil practice. The beginning of the attack was reckoned from the day when the patient, having suffered from prodromic symptoms, became incapable of ordinary duty or was known to have fever. In a very large proportion of the cases the facts were ascertained at the time from the patient himself and confirmed by subsequent inquiry during convalescence. In other instances the information was obtained from comrades. In some of the patients the appearance of the rash coincidently with enlargement of the spleen and the subsequent course of the febrile movement were utilized for the estimation of the day of the attack. Some degree of uncertainty attaches in the great majority of instances to the date at which the prodromic symptoms merge into those of the declared disease.

The average day upon which the temperature became normal in 131 cases as recorded was 22.4 from the beginning of the attack, as nearly as could be ascertained. Eleven patients were admitted after the defervescence; 5 died during the course of the fever. The average duration of the stay in the hospital was 31.2 days.

Hemorrhage occurred in 8 cases, or 5.4 per cent. The amount of blood lost in a single stool varied from 30 c.c. to 800 c.c. In one case which terminated fatally 2600 c.c. of blood were voided in six discharges from the bowels.

Relapse occurred in 21 cases, 14.2 per cent. A single relapse in 18 cases, 12.2 per cent; multiple relapse—3 attacks including the primary disease—in three cases, 2 per cent. The average length of the single relapses was 11 6 days;

the average length of the relapses in the multiple cases 14.3 days. The average length of the afebrile period between the attacks in the cases of single relapse was 5.9 days; the average length of the same period in the cases of multiple relapse was 9.3 days.

Simple toxic or afebrile albuminuria without casts occurred in 84 cases, or 57.1 per cent.

Nephritis as shown by the presence of albumin, free blood, and casts of various kinds, was present in 37 cases, or 25.2 per cent.

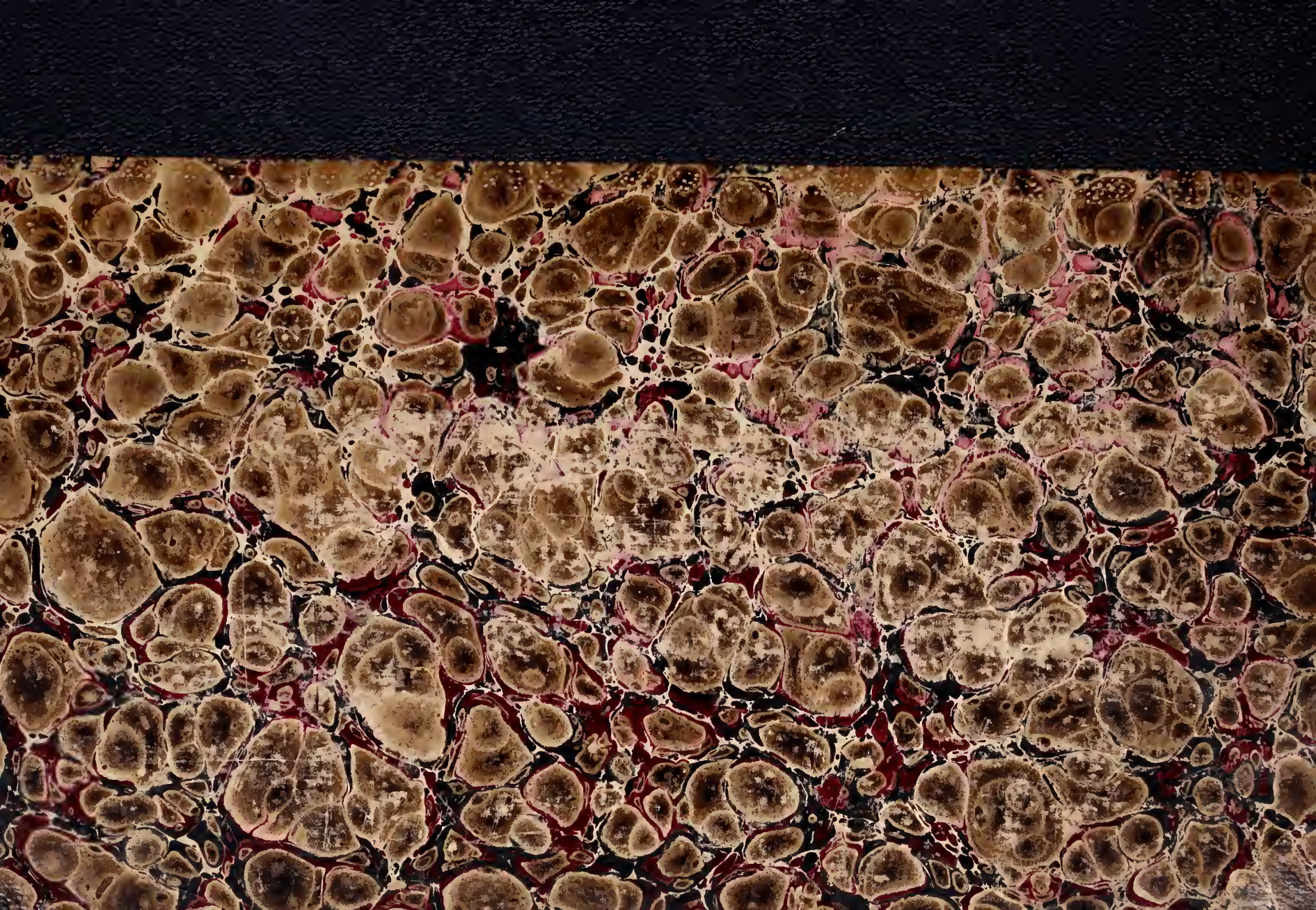
The diazo-reaction was studied some time during the course of the disease in 87 cases. The result was positive in 61, or 70.2 per cent; negative in 26, or 29.8 per cent.

The action of the blood-serum upon cultures of the bacillus typhosus—the Widal test—was investigated in all the cases in duplicate, specimens of blood being sent at the same time to the bacteriologic laboratory at the City Hall and to the laboratory of the German Hospital. In some few instances there was want of correspondence in the reports, but in most of these, duplicate specimens sent at a later period gave similar results. In five instances the result from both laboratories was negative. In 4 of these cases, however, there could be no doubt about the clinical diagnosis. In the fifth, a case from Camp Meade, the clinical diagnosis was rendered in the highest degree probable by the general symptom-complex and the course of the attack.

Venous thrombosis occurred in 5 cases, 3.4 per cent. In every instance the veins of the left leg only were involved. This accident occurred invariably after the defervescence and during the early course of convalescence and before the patient had left his bed.

There is a clinical history of directly previous malarial infection in 16 cases, 10.9 per cent. The malarial parasite was found in 35 cases, 23.8 per cent. The form was usually non-pigmented, intracorpuscular bodies and free hyaline bodies, and pigment in the blood. In several of these cases irregular chills developed during convalescence, recovery taking place under treatment by quinin in appropriate doses.

Pleurisy alone occurred in 2 cases, 1.4 per cent.

Croupous pneumonia occurred in 6 cases, 4.1 per cent. In one instance the pneumonia was followed by an empyema, recovery taking place after drainage. Acute bronchitis, persisting for some time into convalescence, occurred in 2 cates, 1.4 per cent. Acute lacunar tonsillitis occurred in cases, 1.4 per cent. Acute laryngitis with aphonia, but without necrosis of the cartilages, and terminating in recovery, occurred in 1 instance, .66 per cent. Otitis media did not occur in any instance. Acro-paresthesia occurred in 4 cases, 2.4 per cent. Severe secondary syphilis, antedating the attack of enteric fever, was present in 1 case .66 per cent. An acute gonorrhea was noted in 1 case, .66 per cent. Of the five fatal cases, one patient, aged 28, died upon the 26th day of the attack, and the 20th day after admission, of croupous pneumonia. A second, aged 21, died on the 20th day of the attack, and the 9th day after admission, from intense infection. A third, aged 21, died on the 26th day of the attack, and the 19th day after admission, of peritonitis following repeated profuse intestinal hemorrhage. The fourth, aged 22, died upon the 31st day of the attack, and the 20th day after admission, of peritonitis following repeated hemorrhages, and the fifth, aged 20, was admitted moribund on the 21st day of the attack, and died upon the 3d day with symptoms of perforative peritonitis. In none of these cases was a postmortem examination made.

Of the 147 cases of enteric fever, 121 were treated by systematic cold bathing, the average number of baths administered to each case being 37.8; 26 cases were not systematically bathed for special reasons; the greater number of them were admitted with falling or already normal temperatures; several were admitted with a history of recent intestinal hemorrhage and were therefore not bathed, and one was admitted moribund with the symptoms of peritonitis.—Phila. M. J., 1899, iii, 408.